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Driving innovation

Speculation is growing over whether we can expect to see Apple launch an iCar

February was the month when everyone went iCar crazy. There are always rumours about projects Apple is apparently working on, but as outlandish as the iCar rumours sound, when they come from *The Wall Street Journal* and the *FT*, there has to be some credibility to them.

Those reports claimed that Apple had hundreds of engineers working on an automotive project. A quick look on LinkedIn seems to show 640 Apple employees who've worked in the automotive industry. Of that number, 46 current were formerly at electric carmaker Tesla. It seems that Apple was pretty keen to get its hands on them too: Wired claims that Apple is offering up to $250,000 and a 60 percent raise to Tesla employees who move to Apple.

Other recent recruits have included the head of Mercedes-Benz R&D unit, and the project is said to be lead by Steve Zadesky, formerly of Ford.

Then there was the car, registered to Apple, which was seen driving the streets of America, with four cameras on its roof. Suddenly everyone was talking about Apple's self-driving car plans (and ignoring the fact the company has its own wannabe Google Maps and is creating a database of Street View style images).

Ignoring this camera car for a moment, would Apple really be investing in this area? There is some evidence that it has. Apple has filed patents in the past that relate to automotive technologies, for example a 2009 patent for a "programmable tactile touch screen display and man-machine interfaces for improved vehicle instrumentation and telematics", but I've not seen a patent that suggests Apple is actually building an electric car. Most of these patents relate to integrating the iPhone into cars – basically CarPlay.

> **I've not seen a patent that suggests Apple is actually building a car. Most of these patents relate to integrating the iPhone into cars**

But would Apple employ hundreds of engineers to work on CarPlay? It seems unlikely unless there is one day going to be a lot more to CarPlay than playing the tracks on your phone and asking Siri to read your emails.

Here we have two possibilities. Apple is either inventing a way of controlling a car that can be built into existing cars, a kind of extension of what CarPlay is today, or it is building an electric car.

Former CEO of General Motors, Dan Akerson thinks Apple would be crazy to try and take on the automotive industry, which he describes as "low-margin, heavy-manufacturing". Business Insider's Henry Blodget thinks that the automotive industry isn't enough of a money-spinner for Apple. Even if it made as much profit as BMW does in a year, it would be a

tiny percentage of what Apple makes from iPhone sales.

Forbes' Eric Jackson thinks that Apple would make more profit than BMW because it has "operational supply chain guru" Tim Cook at the helm. He reckons Apple could make a car "in a manner that could produce 50 percent margins."

That seems a little far-fetched to us, as it does to Blodget who notes: "There's no super-cheap Foxconn for car manufacturing…. And wireless carriers won't subsidize two thirds to 100 percent of the price of Apple cars."

While it's true that before Apple launched the iPhone nobody knew the potential of that money-spinner, it is hard to imagine a world where a car would become the must-have item that smartphones have become.

But anything could happen in the next few years. Perhaps Apple is inventing a flying car and 10 years from now we will all be living in exactly the way the team behind *Back to the Future Part II* imagined. Or not.

I don't think Apple is working on a flying car, in fact I don't think it is working on any car. I think Apple is working on putting even more technology into car dashboards, technology that will make controlling the car simpler and safer, will help us drive our cars in a more environmentally friendly way, and will provide entertainment to our passengers and information to us. And that in a few years from now, it will be using the relationships it already has with those car manufacturers that have integrated CarPlay in their vehicles, to fully computerise the cars we drive. Ten years from now your car could be running OS X or iOS and you could be using Siri to tell it what to do. But that car could still be a BMW or a Mercedes. Now that could transform the automobile industry.

News

Tim Cook on Apple Watch, Apple Pay and privacy

Apple CEO says the Apple Watch didn't need to be first, just memorable

BY ASHLEIGH ALLSOPP

When Apple CEO Tim Cook speaks, the world listens – even if he's talking to a room full of bankers and other finance bigwigs at the annual Goldman Sachs Technology and Internet Conference.

And he didn't disappoint. Cook used the occasion, which took place on 10 February in San Francisco, to announce that Apple is partnering with First Solar to build an $850 million solar farm in Monterey County, California. The 1,300-acre farm will produce enough power for Apple's new campus, currently under construction, along with the company's data centre, office, and 52 retail stores in California.

"We're doing this because it's right to do," explained Cook, who has taken heat for considering more than just Apple's bottom line when he makes decisions. "But it's good financially to do it. We expect to have very significant savings because we have a fixed price for the renewable energy."

He went on to reveal that Apple is approaching the smartwatch market with the same strategy it used to dominate the MP3 player space: Make memorable products that are easy to use.

Apple wasn't the first company to make MP3 players, Cook said. But before Apple launched the iPod, MP3 players had clunky user interfaces that people found too cumbersome to use. "They weren't used very much," he argued of the iPod's rivals. "They were fundamentally too hard to use, and the user interface was really bad. You almost needed a PhD to use these. They're not memorable. They didn't really move the dial."

Cook then added that the tablet market had been the same: "There were lots of tablets shipping when the iPad came out. But there was nothing earth-shattering." Cook sees parallels to the smartwatch space, where no device stands out. "There are several things that are called smartwatches that are shipping, but I'm not sure you could name any. Maybe you could. I'm not sure the audience could name very many. But certainly there's been none that have changed the way people live their lives."

"And so what we want to do at Apple, that's our objective: We want to change the way you live your life," Cook added. "And just like the iPad has changed the way you work, and hopefully the way you live, and the iPhone has done that, we see Apple Watch doing that."

"I've been using one, and I'm actually wearing one now – but I wear it all the time actually," he added. "And I think one of the biggest surprises people are going to have when they start using it is the breadth of what it will do."

The most obvious use for the Apple Watch is fitness tracking, though, and Cook says he uses it in the gym to track his activity level. "If I sit for too long, it will actually tap me on the wrist to remind me to get up and move."

Cook concluded: "It took a little while to get used to, but it's very good. And so, there's just an enormous number of things it will do, and I think you're going to find something that you're going to think, 'Wow, I can't live without this anymore.'"

Later in the month, Cook confirmed that the Apple Watch will arrive in April in the US, and select countries including the UK.

Apple Pay hasn't reached the UK, but in the US it seems to have been a success so far. The mobile payment system that utilises the NFC chip in iPhone 6 and 6 Plus has exceeded Cook's expectations since it launched late last year. "The reason that I thought it would be a bit slower is because when you're going into the holiday season, most retailers don't want to change anything around their point-of-sale," he said. "We found a significant reception to get it going quickly. By December, $2 of $3 spent with stores with contactless payment were with Apple Pay. There are so many retailers approaching us about getting signed up."

Of course, when something involves customer bank details and money, questions of privacy arise, but Cook aimed to quash those by saying: "We believe that customers have a right to privacy. The vast majority of customers don't want everyone knowing everything about them. You are not our product. This is our product. There's no reason why we need to know where you're buying, what you're buying, how much you're paying. It's none of my business."

Instead, Apple's aim for Apple Pay is simply to offer an easier way of paying that is secure. "It had to be secure, because all of us are tired of people breaching your credit cards," he said. "It happened to me three times."

Finally, Cook spoke a bit about the Mac, which is surprising analysts by growing in market share while the rest of the overall PC market shrinks. "The Mac has gained share for 10 years straight," Cook said. "We're up five times in revenue in an industry that most people look at as left for dead. We think we've got a bright future. We're the only company that has a mainstream desktop operating system and a mainstream mobile operating system."

Interview casts concern over Ive's future at Apple

Apple design guru Jony Ive is feeling the pressure, and reports suggest Apple Watch could be his last project

BY LEWIS PAINTER

Apple design guru Jony Ive is credited with creating the iPhone, iPad, MacBook and most recently, the Apple Watch. It's not very often that Apple opens the doors to journalists and let them shadow such an important figure in the company but that's what it did with *New Yorker* journalist Ian Parker. The 17,000-word profile on Ive is an eye opener, giving a previously unseen insight into his life, design philosophies and emotions, and ultimately new information about Apple.

A large portion was dedicated to the Apple Watch, revealing that Ive was the person leading the initiative, and pushing for such device. Others at Apple showed concerns, mainly regarding its placement in stores and the divide it might cause between the more and less wealthy customers. After pursuing the idea and battling opposition within the company, he began working on the smartwatch back in Autumn 2011, around the time the iPhone 4s was released and also the time Steve Jobs died. So Apple has been working on a Watch for almost four years, with many aspects taking a long time to work out and make decisions on. For example, it took Ive a year to decide that the straps should click into slots.

The profile also seems to rule out Apple Smartglasses, despite patents covering such device. "We always thought that glasses were not a smart move," Apple CEO Cook told the *New Yorker*. "From a point of view that people would not really want to wear them. They were intrusive, instead of pushing technology into the background, as we've always believed."

"We always thought it would flop," he continued. "And you know, so far it has.

[Apple Watch] isn't obnoxious. This isn't building a barrier between you and me. If I get a notification here, it will tap my wrist. I can casually look and see what's going on."

Ive also spoke briefly about that protruding iPhone 6 camera that many described as "un-Apple-esque," admitting that it does bother him. "We get to do it again," he said. "That's one of the things Steve and I used to talk about: 'Isn't this fantastic? Everything we aren't happy about, with this, we can try and fix it'."

One concerning aspect of the profile is the emotional stability of Ive, now one of the two most prominent figures at Apple. In the article, he described himself as "deeply, deeply tired" and "always anxious", which suggests that his days at Apple, at least in his executive role, may be numbered.

It seems that the stresses of life at Apple are starting to catch up on him, with it being apparent in his manner. Parker described it as "unsettling for the way it combined the tender attentiveness of a suicide prevention volunteer with a keenness to move the conversation from the particular to the general."

Ive admitted to Parker that the previous year had been "the most difficult" in his career at Apple, because he'd suffered from a bout of pneumonia and admitted that he had "burnt [himself] into not being very well."

The revelations suggest that Ive is tired, but can't find a way out. He spoke about how uncomfortable he feels, knowing that a hundred thousand employees rely on his decision making and the fact that a retirement announcement could cause Apple's stock price to plummet. To give you an idea of the damage it could cause, a 10 percent drop in Apple's stock would mean a drop of $71bn. His hands are tied, so to speak.

It becomes apparent that Ive lost a great friend when Steve Jobs passed away and that his death has affected him. He says, "My intuition's good, but my ability to articulate was not very good – and remains not very good, frustratingly. And that's what's hard, with Steve not being here now" and referred to Jobs at his memorial as "my closest and most loyal friend".

Even when he talks about the new Apple Spaceship campus, currently in production, he mentions Jobs; "This is something that Steve cared about passionately," continuing to say "there is a bittersweetness here, because this is about the future, but every time I come here it makes me think of the past."

Things at Apple, and for Jony Ive, could have been a lot different. When Jobs returned to Apple after it acquired NeXT, Ive was preparing to resign. But, according to Ive, he just "clicked" with Jobs. "It was the most bizarre thing," Ive said. "We were both perhaps a little – a little odd. We weren't used to clicking."

MacBook Pro failures addressed

A repair programme for MacBook Pro owners suffering from "critical" graphics issues has begun

BY ASHLEIGH ALLSOPP

Reports of failing MacBook Pros have been flooding in since 2013, with many owners of 2011 models with AMD graphics suffering from system crashes and hardware problems that have been described as "critical". After a long wait, Apple has finally announced a repair programme.

On 19 February, the company announced that it is kicking off a repair program for some MacBook Pro models suffering from graphics issues. It's officially titled 'MacBook Pro Repair Extension Program for Video Issues'.

On its support page, Apple reveals that "it had determined that a small percentage of MacBook Pro systems may exhibit distorted video, no video or unexpected system restarts."

According to Apple, affected MacBook Pros were sold between February 2011

and December 2013, so if your laptop was purchased during that period of time you may be eligible.

The specific symptoms described by Apple included distorted or scrambled video on the computer screen, no video on the screen (or external display) even though the computer is on, or the MacBook unexpectedly restarts.

The repair programme will run until 27 February 2016, or three years from the MacBook Pro's original date of sale, whichever of those provides longer coverage.

The programme's arrival comes after a petition started in 2013 urging Apple to recall the affected MacBooks reached a massive 38,200 signatures.

Apple to launch iOS public previews

iOS 9 could be running on your iPhone or iPad sooner than expected

BY GREGG KEIZER

Apple will launch an invite-only public beta of iOS 8.3 in March, then expand the programme this summer with iOS 9.

The pubic preview – Apple's first for iOS – will follow the debut of a similar program last year for OS X Yosemite.

"With a public preview, you get much broader and thorough testing," Said Ezra Gottheil, an analyst with Technology Business Research. "Problems with early versions of iOS show that Apple needs this, that they can't rely on internal private testing before general availability."

According to the reports, Apple will use its invitation-only AppleSeed program to

publicly offer iOS 8.3 starting in mid-March. Registered Apple developers have already had access to a preliminary version of iOS 8.3. AppleSeed is not currently taking new participant requests, Apple stated on its FAQ page.

After Apple introduces iOS 9 at its annual developer conference in June – a now-standard practice – the Cupertino company will expand the beta to the general public, though it's believed it'll be limited to 100,000 customers.

Apple could use those extra eyes: Almost invariably, the initial version of an iOS edition requires quick bug quashing. Last year, for example, Apple issued its

first update to iOS 8 just one week after the official launch, but then pulled the update almost immediately after reports flooded social media and the company's own support forum that customers' iPhone 6 and 6 Plus smartphones couldn't connect to a cellular network.

'Hundreds' working on Apple iCar

Poached employees from Tesla and Samsung are rumoured to be creating an iCar

BY LEWIS PAINTER

Rumours of an iCar aren't new, but new reports have sparked an influx of claims that Apple is already working on one, and that it might arrive sooner than we thought. With Mickey Drexler, an Apple board of directors' member, admitting back in 2012 that Steve Jobs wanted to rethink the automotive industry before his death, it was only a matter of time before the rumour mill went into overdrive.

In early February, the *Wall Street Journal* reported that Apple has "several hundred" Apple employees working on an iCar, with the project being nicknamed "Project Titan". This, of course, sent the Internet into overload about what the iCar could look like, and what it could do.

It's possible that the development of the iCar is taking place at a new secret Apple R&D facility, staffed Steve Zadesky, the Apple exec who oversaw the iPod and iPhone, according to the *Financial Times*. Other reports note that Zadesky is a former employee of Ford. When it comes to who's managing the facility however, there are conflicting reports.

Cult of Mac has claimed that Johann Jungwirth, the man in charge of the Mercedes Benz R&D facility that produced the Mercedes F 015 self-driving car, would manage the project. He's a new hire at Apple and even though he was VP of Connected Cars, User

Tesla

Interaction & Telematics at Mercedes, his LinkedIn page has him listed as Director of Mac Systems Engineering, which CoM thinks is highly unlikely.

It's claimed that Apple is poaching employees from its competition. Reports claim there are 50 ex-Tesla employees now at Apple, most of who had been part of an engineering internship at Tesla. According to a Bloomberg report, Elon Musk, Tesla CEO said, "Apple tries very hard to recruit from Tesla", offering a $250k signing bonus and 60 percent pay increase. It's a similar story with Samsung – Apple is said to be luring battery experts away from Samsung.

It seems to be backfiring, though; a lawsuit was filed earlier this month against Apple by electric car battery makers A123 Systems for an "aggressive campaign" to poach their engineers.

In the same week that initial iCar reports surfaced, there were reports of a peculiar-looking van registered to Apple, driving around the US, clad in various sensors and cameras.

While initial reports suggested that this meant Apple was experimenting with a driverless car, it has since been explained as something different. Paul Godsmark, CTO at the Canadian Automated Vehicles Centre of Excellence has said that it's "almost certainly a mapping vehicle" and explained that the vehicle is in fact not autonomous, but is instead used for mapping, suggesting that Apple is adding street view footage to Apple Maps.

The CEO of Mercedes-Benz has said that he isn't worried about the iCar, despite the Cult of Mac rumours of losing the head of his R&D facility to Apple. He said "If there were a rumour that Mercedes or Daimler planned to start building smartphones then [Apple] would not be sleepless at night. And the same applies to me".

That doesn't mean Apple isn't going develop an iCar, though. Apple has, for over 10 years, patented various ideas that relate to cars. While there are a lot that are referencing CarPlay features, there are some interesting patents that could give us an idea of some of the features of the iCar. One such patent was filed back in 2011 that, if used, would enable you to lock and unlock your car from your iDevice and negating the need for a key.

QUICK FIXES
AND THE TRUTH ABOUT
PERFORMANCE PROBLEMS

By Joe Kissell

I t's not your imagination: your Mac's overall performance can slow down over time. Most often this happens because we gradually add more apps and background processes, have more and more documents and browser tabs open, and don't restart very often. All these things take a cumulative toll on your Mac's performance. Cutting back on the number of things you have open is therefore one of the easiest strategies for putting some zip back into your Mac. Adding RAM (if your Mac supports it), switching from a hard drive to an SSD, and keeping your software up to date are also effective quick fixes for performance problems.

But if I may rant for a moment, I want to call your attention to two oft-touted remedies for slow Mac performance that usually have so little effect as not to be

worth the effort: freeing up disk space and defragmenting hard drives. That's not to say these procedures are pointless or that they never help, but as with repairing permissions, their curative properties are greatly overestimated.

Fortunately, you can prove (or disprove) the effectiveness of such remedies using science. Benchmarking utilities can provide you with cold, hard, numerical facts – if you take the time to use them properly.

Space invaders
Lots of utilities can locate and delete duplicate or excessively large files, old caches and logs, unwanted apps (and their supporting files scattered all over the place), unused fonts, and countless other types of data that may be cluttering up your disk. I'm all for tidiness and

saving disk space, and I appreciate the time and effort such apps save me.

But what bugs me about much of this software is the claim, repeated endlessly in ads and marketing copy, that deleting all this digital detritus will speed up your Mac tremendously. The implication is that there's a direct correlation between performance and disk space used.

There's a kernel of truth in this claim. The true part is that OS X needs some breathing room to store things like virtual memory swap files; temporary files used when installing software; RAM images created when you put your laptop to sleep; and scratch files for audio-, video-, and photo-editing apps. If you run out of breathing room – which happens only when your disk is quite close to being full – OS X will indeed slow down, sometimes to the point of being unusable. Free up

enough space, and performance should return to normal. (The need for breathing room is as true for solid-state storage as it is for hard disks, although SSDs should exhibit less pronounced speed reductions as you approach maximum capacity.)

Exactly how much free space you need to prevent performance degradation depends on quite a few variables. As a rough rule of thumb, I recommend 4GB plus the amount of physical RAM you have installed as a reasonable minimum. But notice that this figure is independent of the size of your disk. In other words, if you have a MacBook Pro with 16GB of RAM and a 1TB disk with 990GB occupied, you're in the danger zone. But put the same files on a 2TB disk and you have loads of breathing room. In the first instance, pruning 100GB of unneeded files might have a miraculous effect on

Erase folders
Utilities like Disk App can help you delete unwanted files, but if your benchmarks show it doesn't make a difference in your situation, you don't need to bother.
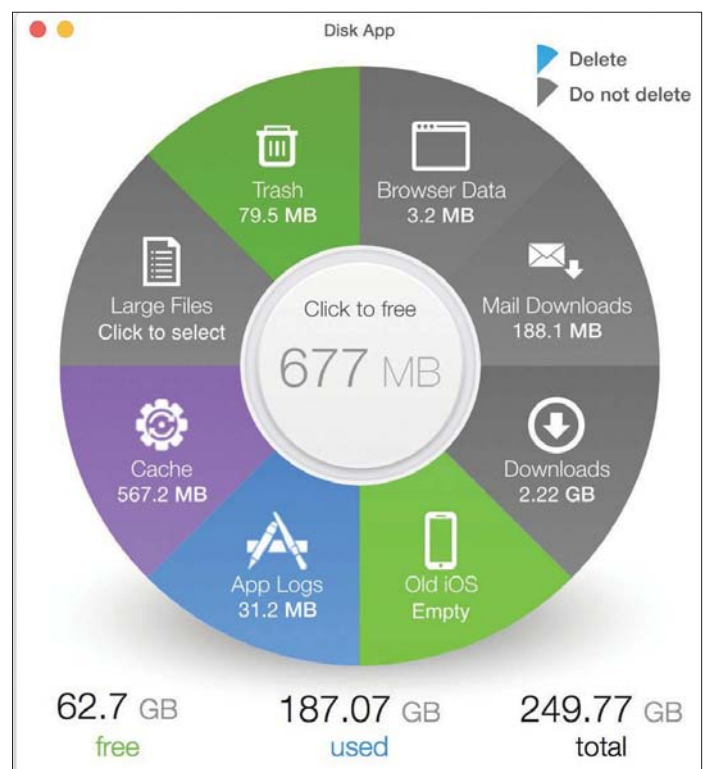
About this Mac For a reminder of how much RAM you have, check About This Mac. Since I have 8GB, I should try to keep at least 12GB of free storage space at all times.

all the pieces of each file. And for that reason, several utilities can defragment your disk, rearranging all the pieces of each file so they can be read in a single pass. Defragmentation can be extremely time-consuming, and while it's happening, your Mac will definitely be much slower than usual because of the constant heavy disk access. (As a side note, I should mention that SSDs don't require defragmentation, and in fact, attempting to defragment an SSD can reduce its lifespan.)

But is defragmentation worth it? Again, it depends. All things being equal, the less free disk space you have, the greater the likelihood of fragmentation, and the greater its impact on your Mac's performance. If you have a large, fast hard drive that's nowhere close to being

speed, while in the second, you probably won't notice any improvement at all.

There's also the matter of what you delete. If your Mac is running slowly because it has insufficient disk space for virtual memory swap files, then deleting a couple of big files might help a lot. But if it's running slowly because a particular buggy app is out of control, then only deleting (or disabling) that app will help. If you let a utility uninstall dozens of apps, disable login items, and clear caches, that might help your speed problem—but not necessarily for the reason you think.

Fragments of truth

When your Mac writes a file to a hard disk, there may not be enough contiguous space to store the whole file as a single unit. Instead, your Mac stores a piece here, a piece there, and keeps a record of where all the pieces are so that they can be reassembled when you need to open the file. This all happens transparently and almost instantly. In addition, OS X automatically defragments smaller files (under 20MB) in the background.

But conventional wisdom has it that since fragmentation only increases with time, eventually disk access will slow down because the read/write head has to physically jump around so much to reach

If you let a utility uninstall dozens of apps, disable login items, and clear caches, that might help your speed problem – but not for the reason you think

Speed boost An SSD can speed up your Mac, and defragmenting is no longer an issue.

full, it will still have some fragmentation, but the real-world performance gains from defragmenting the drive will probably be trivial.

Put it to the test

If you encounter a process that purports to speed up your Mac (whether deleting files, defragmenting, or something else), you could try it and then make a subjective assessment as to whether it helped. But a much better approach is to arm yourself with facts. You can use a benchmarking utility to measure it before and after making a change and compare the numbers.

The two most popular benchmarking tools for Macs are Spiny Software's Xbench (free) and Primate Labs' Geekbench (free for basic 32-bit

benchmarks, £10.49 for the standard version, or £69.99 for the Pro version). They're simple to use – a single click will run a predefined suite of tests and give you an overall numeric score plus individual scores for various tests.

All things being equal, the less free disk space you have, the greater the likelihood of fragmentation, and the bigger its impact on a Mac's performance

But before you jump in, remember that we're trying to be scientific, so you must take steps to ensure that your measurements are valid. Here's what I recommend:
• Eliminate any extraneous factors that might influence the results. Ideally, quit all

apps, close all windows, and turn off any background processes (such as backup software) that might change your Mac's resource usage during the test. (For good measure, I like to restart – without reopening any apps – right before running a benchmark.)
• Run the benchmarking software and record your scores.
• Change just one thing. This is the hard part! If you run the test, make lots of changes, and run it again, you won't know which change was responsible for your new score. So delete some large files, or uninstall an app, or turn off a

background process or whatever – but do nothing else. Then restart your Mac if whatever you changed involves software that runs automatically.
• Now rerun the benchmarking software and again record your scores. Small changes are to be expected for any of numerous random reasons and aren't significant. If you see numbers go way up or way down, whatever you changed was most likely the cause.

Of course, the fact that a benchmark number goes up significantly doesn't mean your Mac will necessarily feel faster or make you more productive. But if the numbers don't move significantly, you'll know whatever you changed doesn't affect its performance, and you can save time and effort by not worrying about that thing in the future.
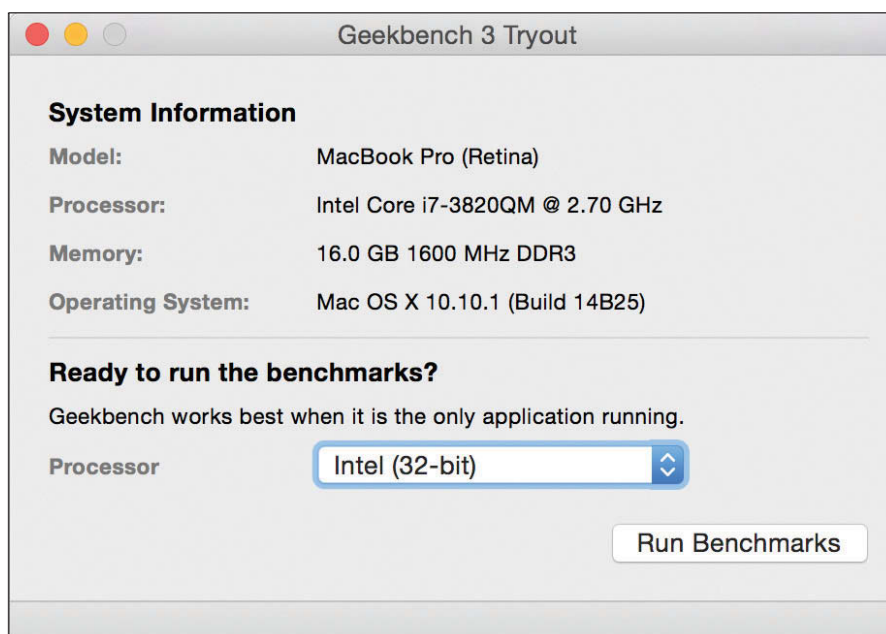
MAVERICKS

VS

YOSEMITE

BENCHMARKS

CAN UPDATING OS X SLOW DOWN YOUR MAC? WE RAN DETAILED SPEED TESTS ON THE SAME MAC RUNNING OS X MAVERICKS AND YOSEMITE TO FIND OUT By Andrew Harrison

Updating OS X on your Mac brings new features and interface enhancements, but it may affect the day-to-day performance and speed of your Mac. In this article we compare the performance of the same Mac running Mac OS X Mavericks and Mac OS X Yosemite, to see what effect upgrading is likely to have on your system.

Every major update – and sometimes even minor ones – to something as fundamental as a computer's operating system is likely to affect its performance. In either direction.

And by performance we're talking about the computer's ability to do the job of running applications and keeping your system ticking along, as well as the way it can streamline your navigation and movement from process to process. In fact, there are two main aspects under review here: the optimisation of code that lets applications, graphics and data IO work as fast as required in the background. And the elements of the user interface that either facilitate or hinder you getting on with what you need to do.

Through the 2000s we saw Mac OS X get steadily leaner and faster (and Windows continue its established trend of getting slower and more bloated). Until OS X 10.6 Snow Leopard at least, after which more additions in Lion and Mountain Lion were superfluous for many users and could have slowed down Macs on their age limit. The move to a slicker OS X 10.9 Mavericks helped for some, but now we have a whole new decimal update in OS X 10.10 Yosemite.

Yosemite has wrought fundamental changes to the OS subsystem as well as the user interface layer that we see. The divisive new look provides translucency to window frames; a flat, squarer look; and a substitution from Lucinda Grande to a Helvetica font throughout. Some people like the move towards an interface that more closely resembles iOS; others are troubled by the cosmetic changes alone which have been describes as a glary whiteness, more garish colours and blurry and hard-to-read typography.

How we tested

We tested performance of both operating systems using a 13in MacBook Pro, running the same raft of benchmark tests on the most up-to-date versions of Mavericks (10.9.5) and Yosemite (10.10.2) using a partitioned flash drive on the same system. Many of the differences were very small. To ensure we had captured real trends rather than random drifts in individual run output, the tests were run multiple times and a mean average calculated.

Processor and memory

In the Geekbench 3 test, the Mavericks system scored 3127 points for single-core mode, and 6650 points in multi-core mode. Yosemite returned results slightly slower for single-core and slightly faster for multi-core operation, of 3099 and 6716 points. That translates as tiny differences of 0.90 percent lower and 0.99 percent higher for single- and multi-core modes respectively. We'll call that one a draw.

GeekBench 3 scores

Single core	Mavericks 3127
	Yosemite 3099
Multi core	Mavericks 6650
	Yosemite 6716

0 1000 2000 3000 4000 5000 6000

Higher scores are better
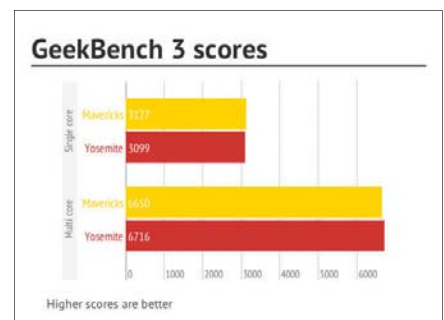
Cinebench 11.5 had similar differences, moving from 1.30 to 1.29, or a 0.77 percent drop, on single-core; and from 3.11 to 3.08 points on multi-core, or a 0.96 percent lower result.

Cinebench 15 meanwhile showed a 1.75 percent drop in single core mode (114 down to 112 points); and 2.49 percent drop in multi-core mode (281 down to 274 points).

Cinebench 11.5 scores

Higher scores are better
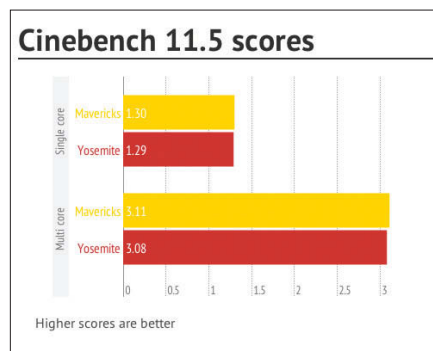
So these two benchmark applications show Yosemite as consistently slower, but by less than 1 percent difference in v11.5 and circa 2 percent with the more recent v15.

In the OpenGL graphics rendering section of the Cinebench tests, version 11.5 showed a very small change in framerate (26.30 down to 26.07, or 0.87

Cinebench 15 scores

Higher scores are better
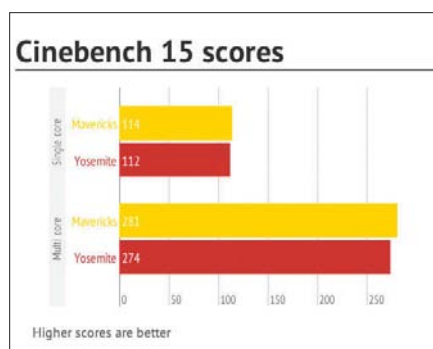
percent fewer frames per second). On the other hand Cinebench 15's graphics test indicated a move from 21.77 to 24.45fps, or a 12.3 percent increase for Yosemite.

SunSpider is a benchmark for quantifying a web browser's JavaScript performance, so here we're measuring the difference between different versions of Safari (7.1.3 and 8.0.3) as much as the underlying operating system. However, since it's the overall

OpenGl graphics scores

Scores in frame per second. Higher scores are better
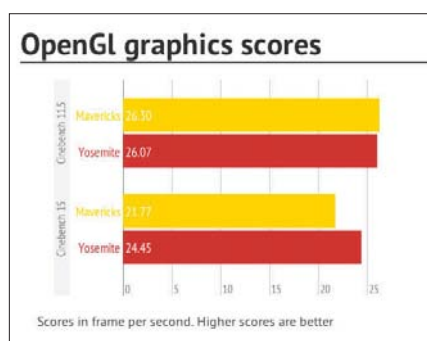
user experience we're trying to quantify, the test is a useful one. Here we saw a 3.17 percent slower overall response time with Yosemite, a change from 148.1ms in Mavericks to 152.8ms.

Peacekeeper is another JavaScript speed test, running a battery of sub-tests of rendering, HTML5 tasks, 2D game graphics, DOM operations and text parsing. The Mavericks system returned an overall score of 5172 points, while Yosemite scored 4913 points. This places

SunSpider scores

Scores in milliseconds. Lower scores are better
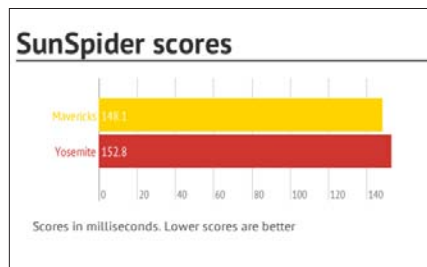
the Yosemite Mac as 5.0 percent slower than Mavericks.

In a nutshell: With the exception of one anomalous result (Cinebench 15's graphics test), Yosemite consistently produces slower performance from our test Mac. But the difference was small: anywhere from slightly under 1 percent to 5 percent.

Real-world games testing

We tried some real-world testing with two Mac games – Batman: Arkham City and Tomb Raider 2013 – and also the

Peacekeeper test scores

Higher scores are better
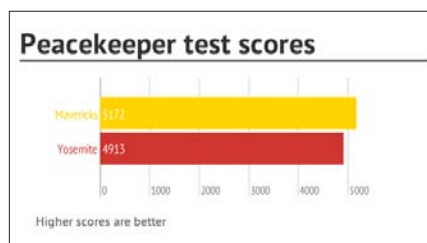
synthetic graphics rendering engine from Unigine Heaven. For all three tests we ran graphics at the MacBook's default native HiDPI setting that renders the 2560x1600-pixel screen like 1280x800. The differences were more substantial, and typically in Yosemite's favour.

The Batman game moved from 30.7fps at Medium detail to 38fps, or a 24 percent increase in framerate. At High detail a similar increase shifted average framerate from 30.3- to 36fps, or a 19 percent increase.

For Tomb Raider we first toggled on the Legacy OpenGL option in this game to obtain playable framerates, since the game's default uses the latest OpenGL API which drastically reduces framerates on slower graphics processors such as the Intel Iris Graphics 5100.

At Normal detail the results were effectively the same between OS versions (22.1 to 22, or 0.45 percent drop) while a shift to High detail restored the earlier trend with a 4 percent framerate increase in Yosemite, even if that only resulted from a smaller than 1fps difference, from 21- to 21.9fps.

Unigine Heaven also benefited very slightly in our Yosemite Mac, moving from 20.5- to 21.6fps, or a 5 percent increase.

The GFXBench test we use for iOS and Android devices is now available for OS X, and this suite of tests showed some interesting differences.

In a nutshell: When testing with real-world games, we saw noticeably higher gaming framerates on Yosemite, with the difference varying between 4- and 24 percent.

GFXBench graphics tests

The first Manhattan test gave an average framerate of 14.62fps in Mavericks, and 13.2fps in Yosemite, or a 9.7 percent slower framerate. The same test ran offscreen had a smaller difference, 28.04 down to 27.73fps, or 1.1 percent slower in Yosemite.

Bigger, much bigger differences were recorded in the next test using the T-Rex animation. Mavericks averaged 47.22fps onscreen, while Yosemite gave us an average of just 30.42fps. That's around a

35 percent drop in framerate for the newer OS. Offscreen rendering followed suit, from 87.98fps in Mavericks to 55.5fps in Yosemite; or a 37 percent drop.

The ALU test measures shader compute performance, and here the last and current OS gave the same effective result, at 59.99- and 60fps onscreen; and Yosemite pulling ahead with off-screen rendering (338.5- to 349.7fps, or 3.3 percent improvement).

The remaining results showed some odd trends. In the Alpha Blending test, on-screen renders were within 1.5 percent, 4379MB/s to Mavericks and 4312MB/s to Yosemite. But using an off-screen 1080p mode the drop was precipitous, from a steady 5617MB/s in Mavericks to wildly varying numbers in Yosemite, from 3050- to 1399MB/s, with a mean at 1899MB/s. That's a 66 percent drop in performance.

The Fill test had a poor showing with Yosemite in both on- and off-screen modes: Maverick's 7002MB/s down to 4685MB/s, and 7302MB/s down to 4171MB/s - with high standard deviation in those Yosemite results, too. That equates to 33 percent and 43 percent drops when moving from 10.9 to 10.10.

In a nutshell: Our test Mac produced noticeably weaker performance across GFXBench's graphical tests when running Yosemite. The difference was sometimes as large as 66 percent.

Internal IO performance

We checked internal storage transfer speeds with the two operating systems, using Intech QuickBench to measure read/write speeds with different data sizes.

Tiny differences were seen, which essentially evaporated after enough iterations and averaging. So whether with Mavericks or Yosemite installed, we saw the same over-achieving results from the little PCIe-attached flash drive, nudging 790MB/s for sequential reads and 740MB/s sequential writes. For small 4kB files, random reads were around 17MB/s and random writes around 64MB/s. In a nutshell: No discernible/significant difference.

Does Yosemite slow down a Mac?

For processor- and memory-based benchmark tests, Yosemite was typically around 1- or 2 percent slower than Mavericks on our test MacBook.

In browser benchmarks based on JavaScript speed, Yosemite was around 3- to 5 percent slower than Mavericks.

For graphics-related activities and tests the situation was more complicated. In the two Mac games benchmarks, one game was around 20 percent faster in Yosemite while the other was essentially the same. But do remember that while double-digit increases sound impressive that may only be a few frames per second.

In other graphics tests such as the synthetic GFXBench suite Yosemite returned much less consistent results but tended to return lower figures, sometimes dramatically so.

And for data input/output as measured via the internal drive, results were realistically the same for the two operating systems.

Outside the lab

For matters surrounding the change in interface, this is harder to measure. More translucency with frosting effect in window frames and panels would suggest more graphical work required to drive the interface, for example, which might fractionally slow down the 'feel' of some older Macs. One of the harder aspects to quantify is latency between your action and the resulting feedback from the screen.

This may take the form of input lag when buttons are clicked or windows picked up and moved. Subjectively on our MacBook, there were no perceivable differences here.

There may be other overall slowdowns due to the reworkings in the human-user interface, however. This user, for instance, has found that the reduction in window drop shadow makes it harder to easily discern the layering of windows, to quickly recognise the edges of open stacked windows. This is an issue common to the even drier and more two-dimensional Windows 8 interface, if more marked and annoying in the latter.

We also found the blurred font issue to be a productivity slowdown, since we sometimes need more time to peer at small, less legible writing, followed by more regular screen breaks to reduce eye fatigue. The blurry writing issue is less apparent on Retina-display Macs, but conversely makes our 2012 15in MacBook Pro's screen (1680x1050) too tiring to view with OS X 10.10 installed.

Other potential slowdowns can arise in Yosemite due to the increased level of user tracking in place by default, with all simple Spotlight local searches being submitted to Microsoft and Apple, generating more network traffic at the least - without getting into the thorny issue of user-privacy violation inherent when you're using OS X 10.10 Yosemite.

Choosing between a Mac and MacBook

Lou Hattersley's guide will help you choose between an Apple Mac desktop and a MacBook laptop computer

Apple's desktop computer range

iMac: Arguably he most famous Mac of all is the all-in-one iMac, with its built-in screen (either 21.5- or 27in). This has recently been joined by a Retina 5K Display model. Prices start at £899.

Mac mini: The diminutive Mac mini needs a separate monitor, keyboard and mouse, but is small enough to fit in a bag and has a wide range of connections. Prices start at £399.

Mac Pro: This offers incredible speed in an all-new cylindrical design. Two main models are available: a 3.7GHz Quad-Core Intel Xeon powerhouse and a 3.5GHz 6-Core behemoth. Both feature dual AMD FirePro graphics cards. Prices start at £2,499.

Apple's MacBook range

MacBook Air: This is Apple's most popular model, with its super-light and super-small design (either 11- or 13in screen). It's no slouch though, and the latest version offers a tremendous amount of battery life (up to 12 hours according to Apple). Prices start at £749.

MacBook Pro: The MacBook Pro is the closest Apple has to a more traditional laptop. Only one version is available (with a 13in screen). It has a 500GB, 5400rpm hard drive instead of the newer flash storage system found on Apple's other MacBooks. The Pro is also the only Mac still being sold with a built-in optical SuperDrive. Prices start at £899.

MacBook Pro with Retina Display: This laptop's super-high resolution display makes compatible apps look amazing. It's available with 13- and 15in screens. Prices start at £999.

Different features

Comparing a desktop to a laptop throws up some pretty straightforward differences. The first being that a desktop is clearly designed to sit on a desk; whereas the laptop is designed to be carried around with you (or, as the name suggests, used on your lap).

Mostly this is due to the design. The Mac Pro and Mac mini need an external monitor, and while the iMac has an integrated display, you still use a separate keyboard and mouse (or Magic Trackpad). Laptops, in contrast, have the keyboard, trackpad and monitor contained within a package small enough to carry around. It may sound like we're stating the obvious, but it's worth noting that beyond a few design differences there really isn't that much technically that separates Apple Mac laptops and desktops.

All Macs feature Wi-Fi (known as AirPort), but the portable nature of a laptop doesn't just affect your ability to take the computer to a local coffee shop or on the commute to work. A MacBook can be quickly moved into meeting rooms for presentations, and if you're at home you can move from the desk to the sofa and carry on using your computer. Having said that there are also a number of key differences between an Apple laptop and desktop.

Display

The screen on Apple's MacBooks ranges between 11- and 15in. The display on the iMacs ranges from 21.5- to 27in. Don't underestimate screen size as a factor in productivity. Plus, you may want to use your computer to watch movies or play games on.

Processors and performance

The MacBook Air, Mac mini and iMac all start with the same 1.4GHz dual-core Intel Core i5 processor. The entry-level 13in MacBook Pro has a 2.5GHz dual-core CPU, while the basic MacBook Pro with Retina Display has a 2.6GHz dual-core CPU. The 15in MacBook Pro with Retina Display has a more powerful 2.2GHz quad-core Intel Core i7 processor. The iMac with Retina 5K Display offers a whopping 3.5GHz Quad-Core Intel Core i5, while the entry-level Mac Pro has a 3.7GHz Quad-Core Intel Xeon E5.

Although there are some areas of crossover between the entry-level MacBook Pro, iMac and Mac mini, it's clear that you get a lot more processor bang for your buck on the desktop range. This isn't just a number on a spec sheet: the faster speed will make a lot of difference if you're using Photoshop and 3D imaging software, or video editing. It also extends the lifespan of the machine, ensuring it'll be able to run newer software for longer.

Graphics

Alongside the Intel processor in each Apple Mac sits a GPU (Graphics Processing Unit). This is often referred to as a 'graphics card', although they are not always separate cards these days. The GPU is primarily used to manage visual effects and a good GPU enables games, and other graphic intensive programs to run more effectively.

At the entry level, the Mac mini, MacBook Air and iMac all feature the older Intel HD Graphics 5000, card introduced with Haswell in 2013. The MacBook Pro with Retina Display has a newer, and faster, Intel Iris Graphics card, also from 2013. Intel HD and Intel Iris are both integrated graphics cards that run on

the same die as the main CPU and share the RAM with the rest of the system.

The 15in MacBook Pro with Retina Display and £1,049 21.5in iMac (£1,049) both feature Intel Iris Pro GPUs.

There's nothing wrong with the Intel HD or Iris integrated systems (they run most modern games), but if you are a keen gamer or work in a visual effects field, then you might want to consider a step up. The Intel Iris Pro offers a marked upgrade in performance, but if you work in professional 3D, video editing or are a keen gamer then consider getting a Mac with a discrete graphics system.

Apple uses nVidia and AMD for its discrete graphics systems, so if you see either of these on your Mac it's going to offer better performance.

The 21.5in, 2.9GHz iMac (£1,199); top-of-the-line 15in, 2.5GHz MacBook Pro with Retina Display (£1,999); and both 27in iMacs (£1,499 and £1,599) have an nVidia GeForce GTX discrete graphics cards (with either 1GB or 2GB of independent RAM for the graphics). These all offer vastly improved graphics performance over Macs with Intel HD 5000, Intel Iris or Intel Iris Pro graphics.

The 27in iMac with Retina 5K display has an AMD Radeon R9 M290X with 2GB video memory. The Mac Pro comes with two graphics cards: dual AMD FirePro D300 with 2GB GDDR5 VRAM on each card (4GB in total) on the quad-core model and 3GB GDDR5 VRAM each (6GB in total) on the six-core unit. These are impressive numbers, and that sort of power is needed if you want to edit the new 4K video.

Storage

On the surface, it appears that you get more storage for your money with a desktop system. The Apple Mac mini and iMac computers start with 500GB, while pricier models have 1TB across the board and they can be upgraded to 3TB. The MacBooks and Mac Pro, on the other hand, come with smaller and faster PCIe-based flash storage.

The MacBook Air comes with 128GB on the entry-level 11- and 13in systems. This goes up to 256GB on the more

expensive models. Taking the 256GB storage to 512GB is an additional £240.

The MacBook Pro with Retina display also offers 128-, 256- or 512GB of flash as standard. The non-Retina model has a 500GB Serial ATA hard drive as standard.

It seems odd that the cheaper Mac mini and MacBook Pro (non-Retina) come with larger hard drives than most of the more expensive Macs. This is because the MacBook Air, MacBook Pro with Retina Display, and non-Retina Mac Pro all come with Flash storage built into the logic board. This is much faster than a traditional Serial ATA hard drive. So although you get less storage, you get much faster performance.

You can upgrade to an SSD (Solid State Drive) hard drive on the iMac and Mac mini, although this costs £160 to upgrade for a smaller sized (but much faster performing) 256GB SSD. The Mac mini and iMac both offer the Fusion Drive as a £160 upgrade. A Fusion Drive blends SSD technology with Serial ATA space to offer a 1TB drive with higher performance.

Upgradability

Apple computers are notoriously difficult to upgrade, and the latest range offers even more restricted computing than ever. The MacBook Air and MacBook Pro with Retina Display both have soldered RAM and hard drives: they are basically non-upgradable. You can, however, upgrade the RAM (up to 16GB) on a non-Retina MacBook Pro and swap out the hard drive. The 21.5in iMac is technically upgradable but so hard to strip down that it might as well not be, but the 27in iMac allows you reasonable access to the RAM and hard drive.

The new Mac mini lets you to swap out the hard drive, but you can no longer easily upgrade the RAM.

The new Mac Pro is an interesting unit in that it replaces the one Mac with superb upgradability options with a radically new design. You can upgrade the RAM easily, but you can no longer install PCI-Express cards into the Mac Pro and the SSD. However, the SSD isn't soldered to the board, instead it sits on a card above the GPU.

What's using up your Mac's storage

Michael Simon reveals five utilities that will help you find what's eating up your hard drive

Whether your Mac has an old-school spinner or high-capacity Fusion Drive, it could always stand to gain a little extra room. Even if you don't obsessively download full seasons of *Breaking Bad*, there are countless ways for your hard drive to get filled up with stuff you don't need anymore – much of it buried in deep, dark folders you never see.

From clearing caches to deleting old mail attachments and forgotten files, a little diligence can go a long way toward keeping that precious space clear. But if you don't have the time or patience to run maintenance scripts and root out browser caches, there are more than a few willing hands to help you out in the Mac App Store. A quick scan of the Utilities section will reveal an abundance of disk cleaners and inspectors that all promise to seek out the cruft that might be taking up necessary room and help you reclaim

some of the space you've lost. Finding the right one for your needs can be arduous work, but to get you started, I took a look at five of them.

Disk App

Hard drive utilities come in all shapes and sizes, but Disk App (£1.49) might be the simplest one I've ever used. With a stripped-down interface that feels more like it belongs in the menu bar than the Dock (that's a compliment), the ultra-minimal app breaks your drive into a tidy pie chart that lets you quickly delete only your Mac's most innocuous files.

Each time you launch it, you'll be met with a circle showing exactly how much room you have available. It's surprisingly fast; press the center button and it'll scan your drive in mere seconds, assembling a snapshot of eight areas that are most likely to be eating up unnecessary space on your drive. The segments are evenly sized, so it'll take a moment to browse

each one, but you can empty any or all of them after only a couple of clicks.

It's not nearly as comprehensive as some of the other apps I tested, but Disk App does an admirable job of quickly clearing out space, even sorting through your documents to find the largest ones, in case you want to shuffle them off to an external drive.

Disk Inspector

Even if your hard drive is packed with files that pre-date OS X, Disk Inspector (£5.99) will dutifully keep its eyes on all of them for you. With a highly visual interface, the app presents a graphical interpretation of everything stored on your hard drive, from photos and PDFs to preference files.

After clicking the play button, it'll take about a minute for Disk Inspector to do its thing, but as it works an animated radar scanner gradually reveals the contents of your drive. When it's finished you'll get a

cool circular analysis of what's inside your Mac – or whatever drive you tell it to scan – but it's not just eye candy. Disk Inspector's presentation makes it easy to spot where the largest files are hiding.

While you can't actually delete anything within the main window (and most system files are completely locked away from view), right-clicking on a file or folder tree brings up a menu with options for Get Information, Reveal in Finder, and Quick Look, which I found particularly useful.

Disk Graph

As its name suggests, Disk Graph (£2.29) displays your hard drive's data as an interactive infographic that you can explore and erase with ease. Unlike the other utilities here, it doesn't automatically recognise installed or mounted drives – you'll need to open a volume using a standard navigation window and add it to your favourites to keep it there. But that's a relatively minor inconvenience when you can get up close and personal with every file residing on your drive.

Once it's done scanning – a quick process that routinely finished up before the progress bar's estimate – you'll get the usual sunburst of coloured bars. But I found Disk Graph to be a bit more forensic with its scanning, as it catalogued every nook and cranny, right down to the files tucked away in the hidden Library folder. Moving in and out of circles is a breeze, and anything that isn't locked by the system can be deleted without needing to leave the app. And if you're looking for something specific, a handy built-in search bar will cut down on the blind guessing.

HD Cleaner

No matter how you use your Mac, you'll find that most of your space-clearing sessions focus on the same cluster of files, mostly located in your Home folder. With HD Cleaner (£3.39) you can quickly access the folders where they're hiding without needing to forage through the fountain of files you probably want to keep.

Disk Graph
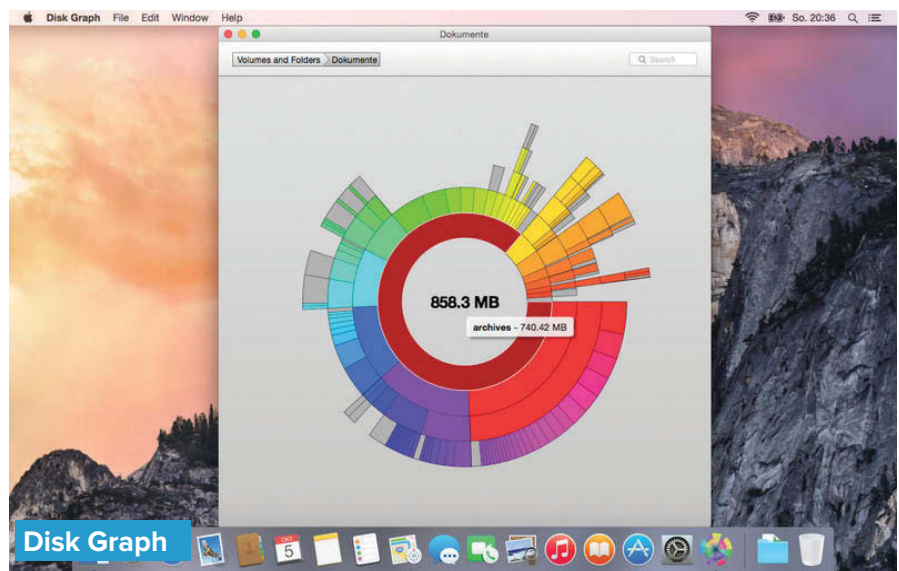
HD Cleaner is about as lightweight as a disk-scanning app gets. It works within your Home folder, but each time it launches it will still prompt you to select it, an extra step that seems unnecessary. It takes about as long to run as it does to click Open, and in less than a second you'll have a list of seven folders that you can clear with a single click on each one. Be careful before rushing down to the red delete button, however, as one of the folders it offers to clear is Downloads, which might contain some files you want to keep. It also does a fine job of tracking down any large documents, which are accessible via a slide-out window.

DaisyDisk

DaisyDisk (£7.99) is one of the most powerful utilities you're likely to find. With an intuitive interface that breaks your drive down into easily digestible chunks, it will give you an exhaustive overview of your drive, letting you explore your files in a novel way.

Daisy Disk took only a few extra seconds longer to scan my drive than the other apps I tested, but the results made it seem like it took far longer. Not only will you get a gorgeous graphical interface with an intricate map of your drive, it also provides a sidebar that offers a description of each coloured chunk. It might not seem like a major advantage, but as you move around the various segments, the continuously changing

sidebar adds a familiar navigational element that makes it easy to locate large files that may be clogging your drive.

As you root around, any files that you want to delete or transfer can be collected for later dispersal, but Daisy Disk isn't just limited to scanning whole disks. Local folders can be dropped onto its window to create quick shortcuts to directories that need constant cleaning.

Which should I get?

If you're looking for full-fledged disk inspector, Daisy Disk is an easy recommendation. There was nothing about Disk Graph or Disk Inspector that I didn't like, but Daisy Disk puts it all together better, combining good looks and intuition into a superior package. Its mix of text and visuals made it a pleasure to use, especially when hunting for specific files. And while each of its peers mapped an old OS X disk installation file that was eating up 5GB of space, only Daisy Disk brought it to my attention.

For quickly clearing out common caches and app logs, Disk App is the way to go. Its pie chart-inspired interface brings an elegance and ease of use that's hard to beat, and it's even quicker than running maintenance tasks using Cocktail or Onyx. In fact, disk-cleaning junkies might want to consider it as a companion to Daisy Disk, since you'll need to do some digging to get to the folders Disk App instantly brings up.

Customise your Mac's desktop

Keir Thomas shows how to take control of your Mac's look and feel with these tips

1. Change the Mac File and Folder icons

Let's start with quite literally the oldest trick in the book. For two decades it's been possible to easily customise a Mac's file or folder icons in the following way.

Start by finding a replacement icon. You'll find loads online – at tinyurl.com/oys9or5, for example – or you can use your own image. If you're using an icon, choose to view the highest-resolution version in GIF or PNG format and download it to your computer (just drag it from the browser to a Finder window).

Double-click to open the picture or icon using Preview. Select all (Cmd+A, or Edit ➜ Select All) and then copy it (tap Cmd+C, or click Edit ➜ Copy). Close Preview. Select the file(s) or folder(s) whose icon(s) you want to replace, then tap Alt+Cmd+I. See the small icon at the very top left of the Inspector window? Click it once, then tap Cmd+V to paste in your new icon (or click Edit ➜ Paste). This won't work on a file or folder alias.

The Inspector window will stick around and show details of other file(s) or folder(s) you select. Just repeat the steps above to paste in new icons for them.

To revert back to the default icon(s) repeat the steps to view the Inspector window and click the icon within it but time tap the Backspace or Delete key.

2. Changing the wallpaper on a Mac

It's easy to change the wallpaper on Mac OS X: just right-click the desktop and select Change Desktop Background, or open System Preferences and select the Desktop and Screen Saver option. You can set your own image by dragging it from a Finder window to the screen preview square at the top left of the System Preferences window. If you've a folder of images, drag the folder to listing at the left of the System Preferences window. If you find a picture you like while using Safari, just right-click it and select Use Image As Desktop Picture.

Bonus hint: To make the wallpaper thumbnail images larger in System Preferences, just hover the mouse cursor over them and use the pinch-expand gesture on your trackpad.
Bonus hint #2: Apple provides some amazing images as part of its screensavers and you can nab them for desktop wallpaper. Click a blank spot on the desktop, then tap Shift+Cmd+G. In the dialog box that appears, paste in */Library/ Screen Savers/Default Collections*. Click one you like then click *Finder ➜ Services ➜ Set Desktop Picture*.

3. Customise the Yosemite interface

Apple allows a very modest set of customisation options for OS X, and you'll find the options by opening System Preferences and clicking the General tab.

Also in System Preferences, you can mitigate some of OS X Yosemite's 'flat' look and feel by clicking the Accessibility icon, selecting Display at the left, and

putting a tick alongside either Reduce Transparency, which will turn off translucent window backgrounds, or Increase Contrast, which will add thin black borders to windows and toolbars.

To personalise the size and spacing of desktop icons right-click in a blank spot and select *Show View Options*. The options should be self-explanatory. The four different view modes within a Finder window (icon, list, column and CoverFlow) can also be separately personalised via the same technique – right-click in a blank spot of the window and select *Show View Options*. Icon view alone allows you to change the background to a colour or image of your choice.

Every folder can be have its own unique look, or you can configure one folder how you like and then click the Use as Defaults button at the bottom of the window to apply the style to all future Finder windows.

Change the Mac File and Folder icons
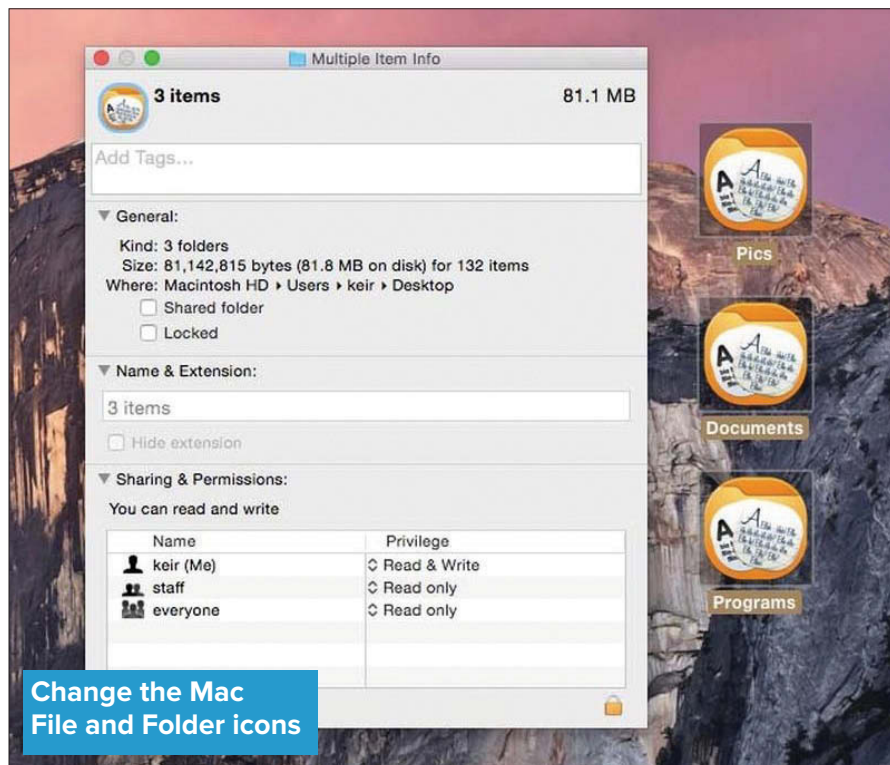
4. Customisation apps

Sadly, the above is about all you get when it comes to built-in personalisation. There's no way to 'theme' the Safari browser like you can with Google Chrome or Mozilla Firefox, for example. For more control you'll need to look to third-party hacks, such as Flavours (£13.15). This lets you theme the colour scheme and interface elements used within every program window in OS X. CrystalClear (£9.91) takes this one step further by adding transparency effects. At the time of writing these two apps aren't compatible with OS X Mavericks.

The Dock can be resized and moved to the left and right of the screen using the options in System Preferences, but to alter its look and feel you'll again need to look to third-party apps. cDock (free) features a variety of different looks that can be applied to the Dock in one click, including 'Yosemite 3D', which will restore the old-fashioned 3D Dock that was abandoned in the move to Yosemite.

cDock can also restore colour icons to the Finder sidebar, as in older versions of OS X. HyperDock (£7.99 from the Mac App Store) can also alter the Dock's look and feel, and it also adds useful new features, such as window previews. Be aware that these apps hack system files, although most people report that they work just fine.

5. Data hacking

Finally, here's a few quick hacks for Yosemite's Dark mode. The first is from Macworld contributor Rob Griffiths. Yosemite overhauled the Dock with a new flatter translucent design, removing the ages-old ability to switch the Dock to black 2D look. If you want something similar to that in Yosemite, open a Terminal window (you'll find it in the Utilities folder of the Applications list) and paste in the following as a single line, then hit enter:

```
defaults write -g
AppleInterfaceStyle
Dark;killall Dock;sleep
3;defaults remove -g
AppleInterfaceStyle
```

Sadly, this only lasts until you next reboot, when you'll have to repeat the procedure. To restore the dock to normal at any time, just type killall Dock into a Terminal window. To be able to activate Dark mode instantly, try this hack. Again open a Terminal window and paste in the following, which should be entered as a single line:

```
defaults write -g _
HIEnableThemeSwitchHotKey 1
```

Then log out via the Apple menu, and log back in again. Once you do so you'll be able to switch instantly to/from Dark mode by tapping Ctrl+Alt+Cmd+T.

To deactivate the keyboard shortcut, again open a Terminal window and paste-in the following before logging out and back in again:

```
defaults delete -g _
HIEnableThemeSwitchHotKey
```

You can set your own image by dragging it from a Finder window to the screen preview square at the top left of the System Preferences window

Retro gaming on a Mac

Lou Hattersley explains how to play classic console games on a modern Mac

With emulation software, OS X can emulate classic games consoles such as the Atari 2600, NES, Sega MegaDrive and Super Nintendo (SNES). All you need is the right software, and compatible ROMs (these are small digital copies of the original game cartridge). Get a working emulator and a working ROM and you are good to go.

Video game emulation software tends to be developed by enthusiasts, and has – in the past – been somewhat hit-and-miss in its compatibility. Multiple emulators were available for the same consoles, and they would run a different selection of ROMs.

The great news is that a new OS X app called OpenEmu (OpenEmu.org) has taken over and made the whole process much easier. It isn't an emulator itself, but an interface for all the different emulators. The site handles installation of emulation devices, letting you get on with finding ROMs for your favourite games.

Where can I get arcade ROMs from, and are they legal?

First, we should talk about ROMs and issue a disclaimer. It is generally illegal to download a ROM of a given arcade machine. In reality, it's a grey area and you are unlikely to get into any trouble with the law for possessing a ROM of your favourite console. It won't take long for you to find the one you are looking for – type 'rom' into Google. You download ROMs as zip files from the site.

How to set up OpenEmu

• Go to *System Preferences ➜ Security*. Check that 'Allow apps downloaded from' is set to *Anywhere*.
• Visit OpenEmu.org and click *Download Now*.
• Move the OpenEmu app from Downloads to your Applications folder.
• Open the OpenEmu app.
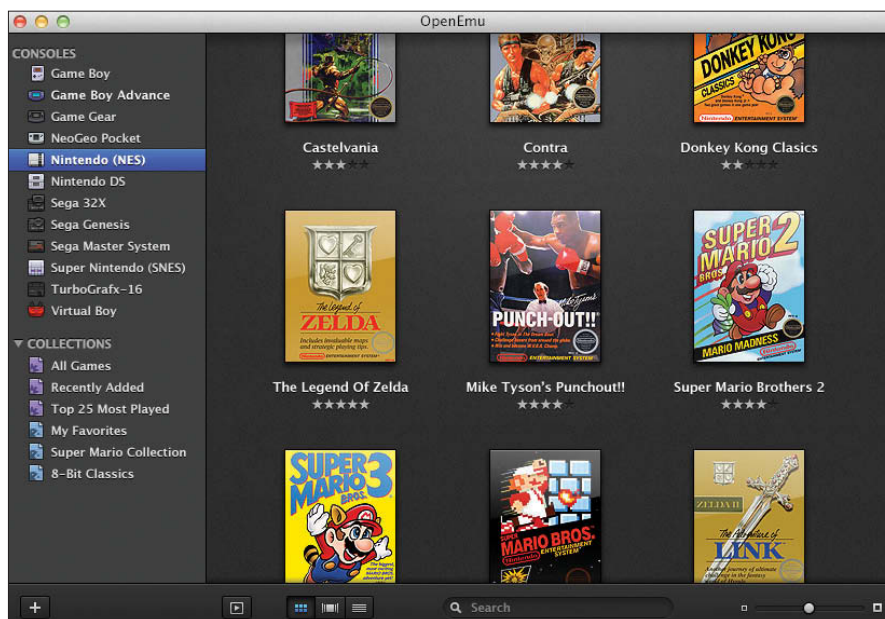
• The Check For Updates Automatically window may appear. We suggest you click Check Automatically so the app can check for the latest updates.
• Click *Next*.
• Select the emulators you want to install from the list. All are ticked by default and we suggest keeping them all. Click *Next* and *Go*.
• Get a ROM of your favourite game and unzip the ROM.
• Drag the folder containing the ROM files to the main window of the OpenEmu app, then select the console that runs the game from the OpenEmu sidebar.
• Double-click the video game artwork to play the game

The game will play in the main window. Play it using the arrow keys and 'A' and 'S' for the buttons. More controls for each console can be found in *Preferences ➜ Controls*. Hover the mouse over the window to reveal an onscreen display with controls to pause and quit the game.

Space Invaders
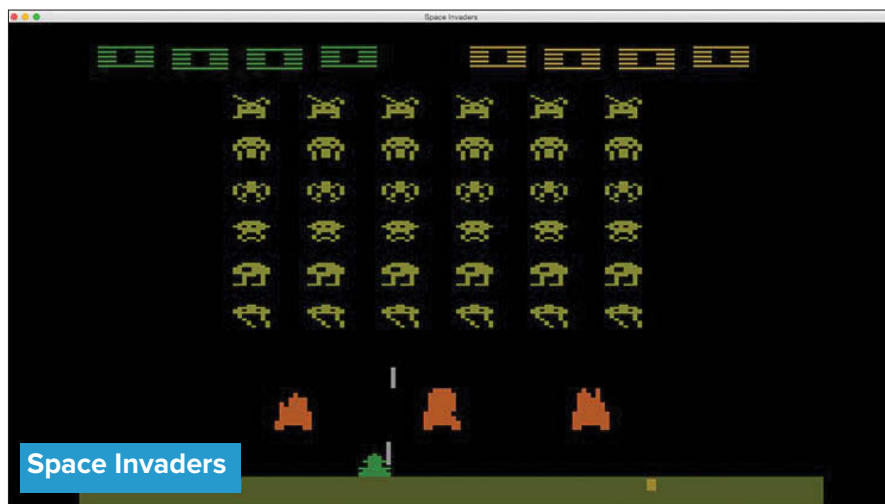
I was an extra in Steve Jobs movie

An extra tells us about their experience working on the upcoming Steve Jobs biopic

I'm still a long way from completing my EGOT (Emmy, Grammy, Oscar and Tony), but I recently spent a Saturday as a crowd extra for the upcoming Steve Jobs biopic. You know, the one written by Aaron Sorkin and directed by Danny Boyle. And if you're expecting major plot reveals from the shoot, you will be disappointed, because when you're an extra there isn't much plot to speak of.

Okay, there are some minor spoilers mentioned herein – well, as much as you can get in a true story we all kind of know. But I can't spoil much, because Saturday's shoot didn't involve the acting out of actual scenes. None of the actors were even there.

Two of the three major characters in the scene – John Sculley and Steve Jobs – were portrayed by stand-ins who barely said anything, instead of Jeff Daniels and Michael Fassbender. The third character, Mike Markkula, had the biggest speaking role, but it was unclear whether or not the actor was a stand-in. (Weirdly, IMDb doesn't list an actor portraying Markkula.)

The only recognisable name at the shoot was the director, Danny Boyle, who gave us instructions on when to cheer and how much. He was quite charming, emphasising the profoundness of the moment in time, how that meeting really made these people feel like computers were for everyone.

The footage shot consisted mostly of audience reaction that will be used for the first scene of the movie, the 1984 Apple shareholders' meeting where the Mac was unveiled. The crowd spent most of the day reacting when Markkula's character took the stage, then

cheering when Sculley was introduced, and went wild when Jobs was announced. This was shot several times, then again and then some more.

During my time on set, Boyle filmed Markkula introducing the famous Ridley Scott *1984* ad during the meeting. Of course, production of the movie is in its early stages, and it's possible that the scene could still change. But attendees of the original meeting will remember that the shareholders meeting came two days after the *1984* ad aired during the Super Bowl.

For most of the shoot, a beige bag was perched on a pedestal in the centre of the stage. When the crew finally pulled

out what looked like an original Mac from the bag, a small roar came from the audience. The Jobs stand-in performed a mock demo a couple of times, and the audience was instructed to react.

One more thing: I happened to see, since we were there for hours, that the six people beside and in front of me were all using Samsung phones. In fact, I noticed an absence of iPhones, and I actually saw a couple of BlackBerry handsets, of all things. That's not an indication of which is more popular, but I think it shows that people were there because they wanted to be in a movie, and not because they wanted to be in the film about Steve Jobs.

The day ended with a raffle for the crowd, with prizes including T-shirts, hats, an iPad mini, and a TV. I didn't win, but perhaps I'll get really lucky and you'll be able to glimpse me on the silver screen when the Steve Jobs movie hits cinemas next year. I'll be the one cheering.

The only recognisable name at the shoot was the director, Danny Boyle, who gave us instructions on when to cheer and how much

What Apple could learn from Google

That's right: things Apple could learn from Google. And yes, one of them is how to be evil. Matt Egan reports

Imagine a crazy parallel universe in which Google was right and Apple was wrong. And then very quickly stop imagining such sick filth. Apple is the best because it focuses only on making great products, and success follows. And yet.

Google is an amazing organisation, with myriad businesses dominating multiple markets. All from an algorithm generated by two academics just 16 years ago. So Apple would have to be even more arrogant than haters say it is not to think it could learn. Apple and Google may be enemies, but there are some things Apple could learn from The Big G. It just may be that it shouldn't.

1. Try things in public

Steve Jobs was fond of voicing the opinion that Google had created nothing of worth beyond Google Search. It is certainly true that Google has put its name to some pretty weak material, in a way that Apple would never countenance. That Google simply appends the word 'beta' to its more half-assed products misses the point: Gmail was a 'beta' for a laughably long time.

But as well as failing with new products, Google succeeds. Gmail and Google Maps are better than their Apple counterparts. As is Google Drive. Simply: Google is prepared to fail, and seen to be failing, much more than is Apple. And it also tries crazy stuff.

It's long been believed that Google encourages its employees to spend 15 percent of their time on new things. Perhaps it is true (although I suspect this rule stops before it gets to the sales floor). Google is not afraid to experiment with robots and driverless cars. They may not all succeed, but some will.

Apple is successful in part because it only tries where it knows it will succeed. Steve Jobs 2.0 saw them pare down the products and product lines it produces in order to only expend energy on great products and services. But it is possible as Apple sits on top with only the downward slopes to travel, that Google's more publicly scattergun approach could unearth some more gems. (Or not.)

Apple and Google may be enemies, but there are some things that Apple could learn from The Big G. It just may be that it shouldn't

2. **Admit when you are wrong**
Sometimes Apple makes rubbish products. There, I said it. I'm yet to be convinced by the Apple TV. I cannot justify the price difference between the LG G3 and the iPhone 5s when the former is a better product. A whole generation of iMacs overheats (in my office, at least). iCloud is ropey. Apple Maps remains a joke.

The best baked–in features of Android can be added to your iPhone, because Google lets you. But you can't run OS X on a Windows PC

In part because of Google's willingness to pump out rubbish (er, try things), it is much more relaxed about admitting when it has a dud. So Google Video was quietly shuttered and YouTube purchased. Google Adx is a combination of all the better ad platforms on the market. Google Buzz and Orkut have long since disappeared, and Google+ is being left to quietly wither on the vine.

Apple only very rarely gets it wrong, but when it does it tends to cling on for too long before cutting its losses.

3. **Collaborate with rivals**
I sit here writing for a publication that attracts from- and loses readers to Google Search, and is partially funded by Google Advertising. The company for which I work considers Google to be a rival and partner, a threat and a service provider. We are far from alone.

Google is prepared to buy, sell, get in to be with or crush anyone and everyone. It would partner with LG, Samsung or HTC to make and sell products, even when it was running Motorola as a going concern. For one thing it wasn't keen to stay long in the smartphone hardware pool, but for another it is confident enough to know that a vibrant smartphone market makes

for a good future for Google. And it has no problem cutting its own ad revenues by changing Google Search algorithms to favour less commercial sites. As long as people are searching and surfing, it knows it will win.

Put it this way: the best baked-in features of Android can be added to your iPhone, because Google lets you. But you can't run OS X on a Windows PC.

Again, Apple has achieved mega success by standing apart from the crowd and doing its own sweet thing. It waits for markets to come to it, and would always rather develop inhouse before it buys, and buy before it partners. (The Kindle app on your iPhone is a source of pain to the developer of iBooks.) But as cross-platform, multi-device computing becomes the norm, there is a danger that the ubiquity of Google's apps, and the flexibility of (don't laugh) Windows 10 starts to undermine Apple's userbase. It is unlikely that the majority of iPhone users will ever use Macs, so they have to able to use all of their favourite tools across all

of their devices – or potentially leak into the Android- or even Windows worlds.

Don't get me wrong: I think Apple has this. But a more collaborative future is coming, and Google knows how to play this game.

4. **Be evil**
No, *Panorama*. Apple is not evil. Not yet, anyway. And certainly not any more than any other large manufacturer in this most capitalist of all worlds.

Two words: user data. Google offers free products in order to find out about user behaviour, and then uses that data to sell ads. Google is the living embodiment of the truism that if you aren't paying for the product, you are the product. People increasingly know this, and only some of them care.

There is a danger that Apple gets left behind in this world, by trying to be only a company that makes things and sells them. Apple gathers user data but doesn't currently allow third parties to indirectly access anonymised data as Google does. My bet would be that in time it may have to, or be squeezed by a coming generation of tech consumers who simply don't pay for things. Evil may well be the future.

5. **Give stuff away**
The same point above, but on a more macro level. Google makes money by selling users to marketers, Apple makes things and sells them to users. Arguably they will both have to meet in the middle. There is a counter scenario in which Apple becomes ever more niche, servicing only the most wealthy and making a very healthy profit thank you very much. But I suspect that the modern Apple is too big an organism to allow that to happen. And if it wants to keep getting bigger, it may have to hold its nose and start looking at either freemium or entirely free business models, where appropriate.

Back to the Future Part II – the truth

Macworld staff look at what the classic movie got right and wrong about tech in 2015

It's 2015, a year that has special status for many movie fans: it's the year to which Doc and Marty travel in *Back To The Future Part II*. To be precise, they travel to 21 October 2015, which means there are just a few short months until we should all have flying cars and wear two ties to the office.

To give credit where it's due, although it doesn't have the defining classic status of the original, BTTF 2's writers had a surprisingly accurate vision of 2015's gadgets. We may not ever see the Hoverboard become a reality (and certainly not by 21 October), but the movie gets a heck of a lot right, and makes one major oversight.

Here, we look back over our favourite gadgets from *Back To The Future Part II* to see whether current tech can match 1989's dreams.

The internet

Okay, so let's deal with the biggest failing first. Even when the film was written in the late 1980s, the writers completely failed to predict the internet. Instead, there's still a heavy reliance on paper in the film's version of 2015. Throughout the futuristic sections of the movie, fax machines churn out paper – in one instance to tell Marty he's fired, and there's a reference to the latest innovation of 'dust-repellant' paper. **Chris Martin**

Smart Glasses

BTTF 2 got one thing pretty much bang on with its representation of wearable technology. Not only did Doc Brown have his stylish aluminium shades, but Marty had some radical specs looking something like a chunky Google Glass prototype.

And other firms have been quick to announce their smart glasses (Samsung, Epson, Sony and Toshiba to name but four) and thankfully they're a little more refined that the ones Marty was sporting in the film. Virtual reality is also gaining traction again thanks to devices such as the Occulus Rift (and even Google Cardboard). **Chris Martin**

Hoverboards

A cross between a skateboard and a hovercraft, hoverboards were the kids' version of the flying cars in BTTF 2. There's no hope at all that Mattel or anyone else will release a working hoverboard in 2015, but it's possible they could be a reality at some point in the not-too-distant future.

Various theories about how the producers made hoverboards work for the film were bandied about, including hidden magnets. The reality, however, is much more mundane. The actors were suspended on wires that were removed in post-production, and the hoverboards stuck to their feet.

Real hoverboards would have to use a quantum superconductor for levitation, but with the limitation of sticking to a predefined path instead of being able to travel anywhere. Quite whether the

techniques used in the video below can be translated to support the weight of a human remains to be seen. **Jim Martin**

Drones
(The automatic dog-walker)
In a classic caper, the automatic dog-walker that appeared in BTTF 2 distracted Marty McFly for long enough to allow Biff to steal the DeLorean and travel back to 1955. It consisted of a drone attached to the dog's collar by a lead. That drone could presumably be programmed to follow a particular route.

While they're not being used for dog walking, civilian- and commercial drones are indeed becoming a common sight. It's yet another remarkably prescient prediction from the BTTF 2 writers.

Amazon is considering using drones to deliver parcels to your door as part of its Amazon Prime Air project. Drones are also being used for filming and surveillance purposes. In the film, a drone is sent by the USA Today to take photos for the paper.

Returning to dog walking, an enormous robot called Luna that was unveiled by RoboDynamics in 2011 could be the answer to automatic dog-walking. The robot can also help with various tasks around the home, including walking your dog. RoboDynamics expects that there will be a robot in every home by 2021. **Ashleigh Allsopp**

Skype
Video-conferencing is one technology we saw in BTTF 2 that is already part of every day life. In one famous scene we watch Marty's colleague Douglas Needles convince him to get in on a work related scam, but unfortunately the call is being snooped on by his boss, who then fires him. Having ended the video call Marty's boss sends a fax to confirm he has been fired, not so high tech.

It's slightly disconcerting to see all the information about Needles flash up on the screen: age, 47; birthday, 6 August 1968; address, wife... It's as if his GCHQ file has just been opened up, and just like today, we wonder if the GCHQ and other government agencies are listening in on our calls like Marty's boss was.

Now we are actually in the future, video-conferencing isn't used only for bad, though. A friend of mine got a job recently after being interviewed over Skype. The first time he met his new employer was on the first day in the new job. Today video-conferencing is a popular way for businesses to communicate with colleagues and clients who are based around the world. It saves money in travel costs, and also stops our carbon footprints from getting too big. It's not clear where Marty's boss Ito Fujitsu was based, but perhaps we can presume that he was in Japan and Marty does indeed work remotely. **Karen Haslam**

Biometrics
In BTTF 2's imagined 2015, fingerprint scanning is commonplace, used for home security and electronic payment. Most people unlock the door to their home by pressing their thumb against a scanner;

charity muggers carry around portable versions of the thumb pad to solicit instant donations, which are subtracted from online accounts on the basis of biometric IDs.

We're not there yet, but fingerprint scanning is widespread in our timeline too. Apple famously gave the iPhone 5s a fingerprint scanner for one-touch login – analysts expect the company to expand this component's capabilities in future – but they've been around for a lot longer than that. We've seen them built into laptops since 2004, and we've even seen them on portable storage drives.

And maybe biometrics are finally becoming practical. On the home security front, heavy-duty fingerprint-scanning padlocks are available, although they remain rare; the need for batteries makes us wonder how much the old faithful padlock really needed to be improved. At least you don't need to worry about losing the key.

At any rate, let's hope one aspect of the thumb pad in BTTF 2 doesn't appear in our own society: the practice of 'stealing' other people's thumbs in order to access their money and property. Thumbs down to that. **David Price**

Time travel?
I loved the first Back To The Future. I went to see it in the first week of 1985 with the 12 Morley Cub Scouts – and yes, watching in 1985 a film set in 1984 and 1954 is a kind of time travel. In the intervening 30/60 years time travel has not become a reality – but I could have told you that in 1984, 1954 or any other time in-between then and now.

Time travel as depicted in Back To The Future 1, 2, 3 or any future reboot is the one bit of tech that we will never see. Ever. We'd know about it if time travel was invented at any point in the history of our civilisation (or those that came and went before and after). If time travel exists at any point in history it exists in all points of history, so unless Doc Brown is hiding his invention over in the States we're forever out of luck on that score. Which is a shame, because I think I'd rather suit Marty's body warmer. **Matt Egan**

HOVERBOARD

Boost your home's wireless signal

Simon Jary reveals the tips, tricks and gadgets that will help improve your wireless signal

I f the Wi-Fi in your house is flaky, you might consider a Wi-Fi range extender to push your signal that extra bit further. Or you can add Powerline adaptors that use your home's electrical wiring to create a speedy home network with added new Wi-Fi hotspots.

All of us know a house's weak or dead Wi-Fi spots, and it's frustrating when these are where you need a strong Wi-Fi signal most. These are most often caused by distance from the wireless router, thick stone walls, and interference.

1. Update your wireless router

If your house suffers from weak Wi-Fi, we first recommend that you think about upgrading your wireless router.

The oldest-to-newest Wi-Fi standards are: 802.11b, 802.11g, 802.11n, and 802.11ac. If you have an older wireless 'b' or 'g' router, you should consider replacing it with a newer wireless 'n' or 'ac' device that offers longer ranges and

faster connection speeds. Why not be cheeky and ask your ISP to send you an updated wireless router? If you've been a customer for a while, it should help you out, but watch out if it asks you to sign up for a longer term, unless you're happy with its service.

Though newer routers may not significantly increase the range of your wireless network, you should at least get better speeds at longer distances.

You wont get the maximum range and performance from the newer wireless router unless your computers, smartphone or tablets also use the same Wi-Fi standard. An old laptop is unlikely to boast 'ac' or 'n' Wi-Fi. Check the specs to see which wireless standard it is using.

Rather than buy a new laptop or desktop PC or Mac, you can buy a wireless adaptor – from just £25 – that plugs into a USB port. You can also add a new wireless adaptor inside a desktop

PC's case or via a PC Card slot; but good luck trying that with a Mac.

What about your smartphone's wireless? Apple's iPhone 6 and Samsung Galaxy S4 and S5, for example, are equipped up to 802.11 ac (and backwards compatible with the older standards), while the iPhone 4 and 5, Galaxy S, S2 and S3 are compatible up to 802.11 n.

2. Create a new Powerline home network

We also recommend considering Powerline adaptors that create a fast home network using the electrical wiring in your house. This means you can take your internet around your house without losing much performance. Creating a Powerline home network is as easy as plugging in an adaptor to a power socket.

Simply plug one adaptor into a socket near your router and connect it to the router using an ethernet cable (usually supplied with the adaptor). Then plug the

second adaptor into a power socket in a faraway room. You can then attach this to your smart TV, Sky+ box, games console, laptop, and so on, via another ethernet cable. This means that you can do without Wi-Fi for more demanding tasks such as streaming HD TV shows or moves from catch-up TV services such as BBC iPlayer, 4oD and Sky.

Powerline adaptors act as if they're directly plugged into your router – even if they're on the other side of the house. You need at least two adaptors, and the best way to buy these are as part of a starter kit. The best Powerline adaptors can also create a new Wi-Fi hotspot right there in the second (or third or fourth) room. These create not merely boosted signals – like you get with a Wi-Fi extender – but close-to-fully performing new Wi-Fi hotspots. They cost more but are more versatile and provide faster speeds than mere extenders.

3. Wi-Fi extenders

A new wireless router or Powerline Adaptor set with built-in wireless are best but can cost more than a simple Wi-Fi Extender. The best Powerlines, with wireless functionality, we tested cost from around £50 to £150. Wi-Fi extenders such as TP-Link's TL-WA860RE (read our review on page 50) costs less.

Wi-Fi extenders catch a wireless signal and then rebroadcast it, helping to strengthen the signal from a router on a different floor of a house or on the opposite side of a building. It should be noted that they can also drag down your network's performance. A repeater uses half its internal antennas to receive a wireless signal and the other half to transmit a new signal – in effect halving the potential speed of the device's network connection. This shouldn't be that noticeable for light web browsing, email, and so on, but can be felt when streaming video or moving files around the network. That's why we prefer Powerline for the more demanding tasks.

Wi-Fi extenders share the bandwidth with the router. Wi-Fi speeds are slower because it's sharing the data between the router and the extender, whereas the
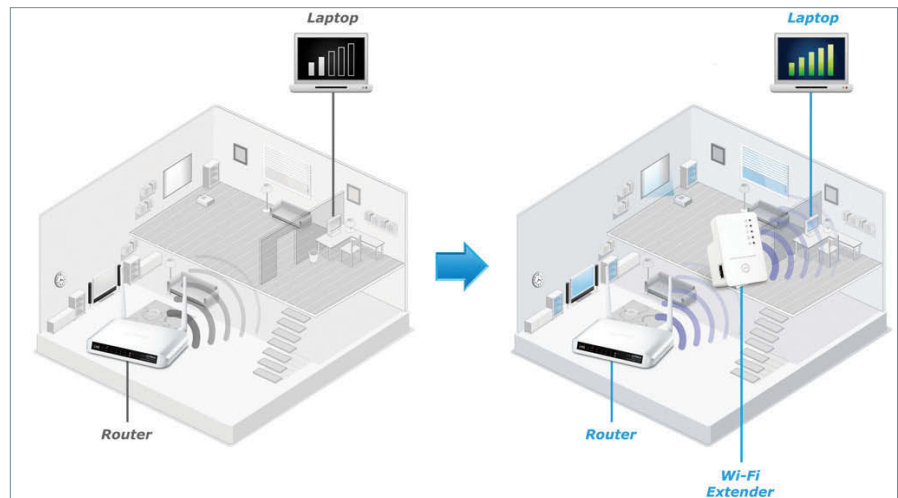
Powerline simply acts as a single device (not sharing the bandwidth) and so you get better speeds.

The Wi-Fi extender needs to be placed in a central location, not too far away from the main router. If you put the repeater at the far edge of your main network hoping to strengthen the signal you will reduce the speed of your connection to the rest of the network and to the internet.

Remember that the extender is just boosting the signal. If it's placed in a weak Wi-Fi spot, then it will merely push around that weak signal. Place it in an area with better Wi-Fi and the signal it pushes out will be stronger, too.

The ideal location for a range extender is half way between your main router and the intended wireless devices – in an open corridor or spacious room rather than a crowded space. It should be away from interfering devices such as cordless phones, Bluetooth gadgets and microwave ovens.

4. Bands on the run: 2.4- or 5GHz wireless

We need to explain the difference between Wi-Fi bands. We'll try to keep this as technically simple as possible, but skip if this stuff is just going to get your head spinning.

Wi-Fi can work over one of two spectrum bands: 2.4- or 5GHz. The trade-offs between 2.4GHz and 5GHz have to do with interference, range, and speed. Manufacturers claim that 2.4GHz routers or extenders can reach up to

300Mb/s speeds, while 5GHz devices have a theoretical maximum of 450Mb/s. Dual-band devices are therefore sometimes rated as 750Mb/s. Remember that these claimed speeds are theoretical maximums, and you won't be getting anywhere near these speeds, but you can achieve perfectly acceptable wireless performance using such devices.

Each band has its limitations, though. 2.4GHz devices face a battle for the available space, and so cause interference between each other. The 2.4GHz band is also divided into overlapping channels. The more overlap, the greater the interference among networks located closely together.

Switching to 5GHz alleviates the channel problem because so many more channels are available – and without any overlap – in the 5GHz band. But 2.4GHz does have one big advantage over 5GHz: range. The shorter wavelengths used in the 5GHz band cannot penetrate as well through seemingly solid objects like walls, ceilings, desks, and, yes, people.

The more interference, the less speed and range; the greater range you want, the less speed you can have; the greater speed you want, the more you have to mitigate interference and work closer to an access point.

A dual-band (2.4- and 5GHz) Wi-Fi extender should offer the best of both worlds. The same goes for Powerline adaptors. The latest Devolo dLAN 1200+ Wi-Fi Starter Kit, for example, uses 'ac' and 2.4- and 5GHz bands.

Using gesture control in OS X

Martyn Casserly explains how to control OS X with a Magic Mouse and Magic Trackpad

While Microsoft has decided to implement a touch-based interface in Windows 8.1 (much to the ire of many Windows users), Apple has avoided this potential disaster and instead developed excellent solutions for OS X on its Trackpad and Magic Mouse. If you don't know about the various gestures of which these devices are capable then you're missing out on some of the quickest ways to navigate around OS X. Here we'll show you our favourites

and answer the perennial question of how you right-click on a Mac.

Enabling gestures
 If you own a MacBook Air, MacBook Pro, or even use a Magic Trackpad or Magic Mouse with your iMac or Mac Mini, then there are a wealth of multi-finger gesture commands available. To find them you'll first need to go to System *Settings* ➜ [Trackpad or Mouse], then peruse the list. Each command is also accompanied with a video demonstration that shows the

gesture and what it does on your Mac. To the left of each command you'll see a tick box, which you'll need to click if you want the gesture to be enabled. Within the settings are various tabs – Point & Click, and More Gestures for the Mouse, with an additional Scroll & Zoom section for the Trackpad. Each of the commands listed below will be found in one of these.

Scrolling on a Trackpad
Two-finger scrolling is a very useful gesture, and one you will use probably

more than any other. These days its a default on any new Mac and all it involves is using two fingers rather than one whenever you want the contents of a screen to move up or down. So when you point at something on a page you move one finger around the trackpad, but if you want to then scroll the document or web page add a second finger and move them both in the direction you want the display to go. This saves you having to find the scroll bar on the right side of a window, or using the age old Alt+[Arrow key] to make the contents leap up a page.

Disabling natural scrolling

A few years ago Apple started using something it calls natural scrolling. This seeks to emulate the physical act of you moving content – for example, if you push your fingers up on the trackpad the content on the screen will move up. Some people seem to like this, but as it's essentially reversing the way most have used trackpads for a good number of years, it's not always appropriate. To disable the feature go to the Scroll & Zoom tab and ensure the Scroll direction: natural option isn't ticked. The same rules apply for the mouse, too.

Right-clicking on a Magic Mouse

As Trackpads and Magic Mouse devices don't have separate left and right buttons it can be a little confusing at first to know how to bring up the right-click menu. Within the Point & Click tab, you'll see the Secondary click command, this is the one that you'll need to define how the right click function works. When you enable the command look to see the description written below 'Secondary click', this is actually a drop-down menu. Click on this and you'll have the option to either tap two fingers anywhere on your trackpad to right-click, or allocate the bottom left or right hand corner of the trackpad to open the menu when you click it. For the Magic Mouse you have settings that mean you either click the top right side of the mouse or the left, depending on what you prefer. Don't forget that you can also hold down the Alt key as you tap or click to give you similar results.

MAGIC MOUSE

Look up definitions on a Trackpad

This simple idea allows you to instantly search for dictionary definitions and wikipedia entries on any text when you tap on it with three fingers. The best part is that you won't be taken to another app or browser, but instead a small pop-up window appears next to the word or phrase in which you were interested. To enable this excellent feature go to Point & Click and tick the Look up box.

Navigate websites by swiping

One way to speed up interacting with websites is to use the Swipe between pages gesture. When enabled, you can move back to a previous page on a website by swiping two fingers to the left on a trackpad, or one finger to the right on a Magic Mouse. To go forward again just reverse the process. This also works in other apps that have back/forward buttons, such as the App Store.

Zooming on a Trackpad or mouse

Zooming on a trackpad involves putting pulling your thumb and one finger together in a pinching motion to make things smaller, or pushing them apart to make things larger. It also works in Safari for looking in more detail at web pages. Double-tapping on the trackpad with two fingers will also zoom within some apps, and repeating the tap will zoom out again. This double-tap feature also works on the Magic Mouse, just remember not to tap the middle of the device.

Rotate images on a Trackpad

By twisting a finger and thumb around each other, you can rotate items in apps like Preview and iPhoto, although only 90 degrees each time. To rotate 180 degrees you'd have to rotate once, then repeat the gesture to rotate a second time.

Mission Control and Exposé

Two of the most useful ways of navigating around OS X is by using the gestures for Mission Control and Exposé. Swiping up with three fingers activates Mission Control, which displays all the apps currently running on your Mac, and allows you to quickly swap between them. Swiping down again cancels the command. This gesture also works on the Mouse by double-tapping two fingers on the body of the device.

By ticking the box under the More Gestures tab in Trackpad's System Preferences, you can swipe down with three fingers to activate App Exposé. This will show just the open windows related to the app you're working on, which can be useful if you've lost a pop up window somewhere behind your web browser.

View the desktop on a Trackpad

If you want to quickly clear all your open windows away and get back to the desktop, then you need to use the Launchpad gesture. Place a thumb and three fingers apart together on the trackpad and then spread them apart. Everything on the screen will now disappear off to the sides and you'll see the desktop. Reversing the gesture brings them all back, and if you bring them together again you'll enter the Launchpad section with shows you all of your installed apps.

Open the Notification Centre on a Trackpad

If you want to respond to social network messages, check your schedule, or use any other notification widget you may have installed, swipe two fingers in from just outside the right-hand edge of the trackpad to open the Notification Centre.

9 COOL EXTENSIONS FOR SAFARI

THERE ARE DOZENS OF EXTENSIONS AVAILABLE FOR SAFARI. HERE'S OUR SELECTION OF NINE WE LIKE TO USE ON A REGULAR BASIS
BY CLIFF JOSEPH

YOUTUBE LYRICS

If you're like me and you spend a lot of time listening to music videos on YouTube, then you'll really like the YouTube Lyrics extension from Rob Wu.

Whenever you play a song on YouTube this extension displays a little button just below the video window. Click on this and the extension will locate the song lyrics on the internet and display them in a window at the side of the screen.

It can search a number of different sites for the lyrics and, despite the name, the extension works on other websites too, such as Spotify and Grooveshark.
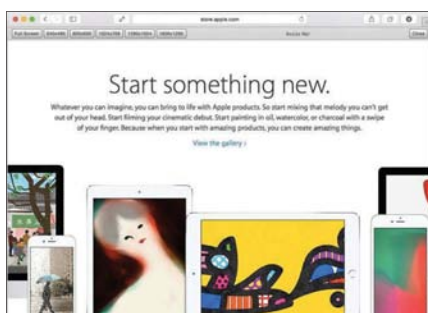
RESIZE ME

When I'm browsing the web, I often end up with multiple windows scattered around the screen, and find that I spend quite a lot of time resizing windows to try and keep everything organised.

There are a few extensions that let you quickly resize your browser windows, but Resize Me is the one I like best. Once it's been installed Resize Me displays an extra toolbar with buttons that specify a number of different window sizes, and you can resize the current window by clicking on the relevant button.

You can also hide the toolbar when required, and specify a custom size for Safari windows that suits your display or the way you prefer to work.
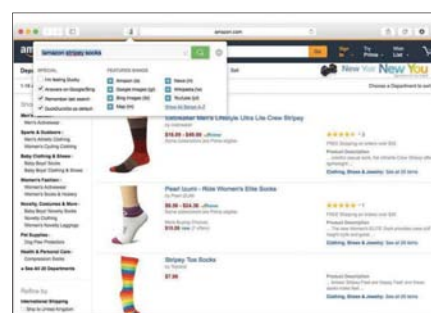
DUCKDUCKGO

Google is still king of the search engines, but its poor record on privacy means that many people are now starting to look at alternatives such as DuckDuckGo.

Unlike Google or Bing, DuckDuckGo doesn't track you or keep any record of the searches you make. You can already set DuckDuckGo as your default search engine using the Preferences panel in Safari, but this official extension from DuckDuckGo adds a number of other features as well, including special '!bang' commands that allow you to perform a search on just one specific website. So, typing '!amazon stripey socks' would take you straight to Amazon and show search results for stripey socks only.
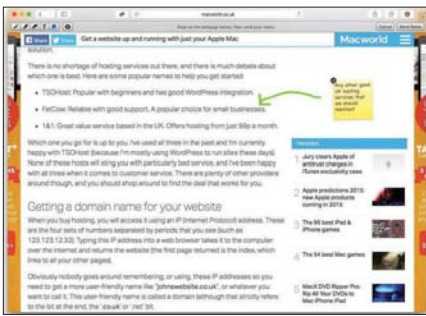
CODA NOTES

The latest version of Mail for Yosemite has a Markup option that lets you add notes to images that you include in your emails. Coda Notes provides similar features for Safari, with a little toolbar that allows you to add notes or use a pen to highlight parts of a web page. You can then hit the 'Send' button to email a screenshot of the annotated web page.

Coda Notes is designed for Safari 7, and is still waiting for a Yosemite update, but it's handy for Mavericks users who haven't updated to Yosemite.

AUTOPAGERIZE

When you're doing a search on Google, or shopping on eBay or Amazon, you generally get your search results served up one page at a time, and you have to keep clicking the 'Next' button to see each successive page of results.

Autopagerize can speed this up for you. As you scroll down through, your search results this extension automatically loads the next page of results and presents the information as one long, continuous list.

SEARCHPREVIEW

When you run a search on Google or one of its rival search engines, you'll generally see a few images at the top of the results list, followed by simple text descriptions for the rest of your results.

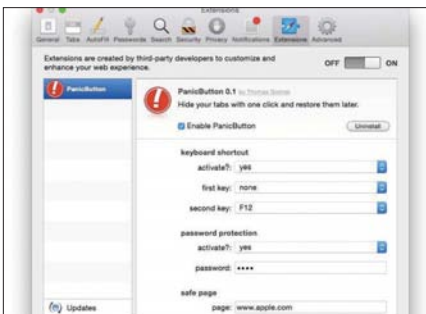SearchPreview gives you a thumbnail preview of each web page along with the text description, which can help to speed up browsing. The extension works with Google, Bing, Yahoo and DuckDuckGo, so the main search engines are covered.

PANICBUTTON

PanicButton is a handy extension for those NSFW moments. If you don't want anyone to see what you're looking at on the web, you can just hit the PanicButton icon in Safari's address bar and all your current tabs will be hidden and replaced by a 'safe' web page of your choosing.

You can also set up a keyboard shortcut to activate PanicButton. For extra security, you can even add a password that prevents anyone from navigating back to see what you were looking at. Unfortunately, it's not 100 percent safe, as it only works with tabs in the front-most window, rather than in every single window that you may have open.
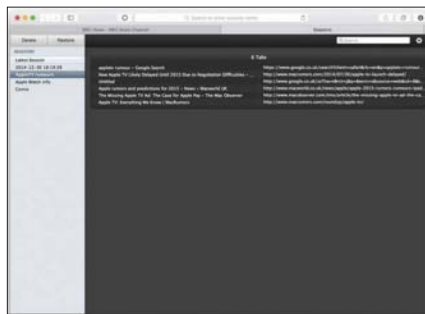
SESSIONS

When I'm working on a project, I often have several web pages open all at once, and which I may want to return to at a later date.

Safari already has an option that lets you 'open all windows from last session', but this handy extension goes further than that by allowing you to save multiple browsing sessions that go back to different dates and times.

So if I'm writing a couple of articles about the Apple Watch, for example, I can save two different sets of browser windows and tabs, and then use Sessions to recall them whenever I need to.

DERPYME

Copying long web addresses can be a bit of a nuisance, especially if you want to share them with friends on sites such as Twitter or Facebook. This has given rise to a number of URL 'shortening' services – websites that allow you to type in a long address and then give you an abbreviated alternative that is much easier to copy or type.

There are also several extensions that can shorten URLs for you, but derpyme is one of the quickest and easiest to use. Just go to the web page that you want and click the derpyme button to generate the shortened web address, then use Command-C to copy it.

Trace a stolen MacBook

How Find My MacBook can help retrieve a stolen MacBook. Matt Egan reports

Find My Mac allows you to locate any Apple device that has gone missing, by logging into iCloud. It lets you detect a lost Mac from another device using the Find My iPhone web app on iCloud.com or the Find My iPhone app on an iOS device. But you have to enable it first. In this features, we explain how to find a stolen Mac.

How to enable Find My Mac on your MacBook

First, we'll tell you what to do before your MacBook is stolen (we're not saying it's going to be stolen, by the way, we have no inside knowledge). Every MacBook user should do this. Do it now.

You may have already enabled Find My Mac if you set up a free iCloud account to use with your Mac (if you are using iCloud it may even be enabled by default). Here's how to check.

Head to System Preferences and open up the iCloud pane. If you are already logged in to iCloud, simply ensure you've selected the Find My Mac checkbox.

Alternatively, from this screen you can now either log in to an existing iCloud account of create a new one and then log in. Either way, it is free. Once you've turned on Find My Mac you're good to go. Next, we'll show you what to do if your MacBook is stolen or missing presumed stolen.

How to use Find My Mac to trace your MacBook

Okay. You feel sick to the pit of your stomach because you know, you just

First up, call the police. They're the experts. They will work with you on this, and can advise you on how to use the powers given to you by Find My Mac

know, that your MacBook has been stolen. Take a deep breath. Here's what you need to do:

First up, call the police. They're the experts. They will work with you on this, and can advise you on how to use the powers given to you by Find My Mac. But they will dissuade you from going vigilante. And that is good advice.

But you can track your Mac via iCloud.com or with the Find My iPhone app on your iPad or iPhone. Despite the name Find My iPhone can be used to trace any Apple device that uses iCloud and has been set up as explained above.

You need to log in to Find My iPhone or iCloud, either by launching the app on iPhone or iPad, or by signing in to iCloud via the internet at iCloud.com. Either way, you can now click the Find My iPhone button.

You'll now see a list of all the findable iPhones, iPads and Macs associated with your account, hopefully including your missing MacBook. Just below each device will be the location it was last seen. If you see green dot next to a device's name, it means that Find My iPhone located it. A grey dot means that your stolen MacBook is offline or could not be found.

If your MacBook has been found by Find My Mac, you will be able to view it on the map, switching between Map, Satellite, and Hybrid views. Unlike an iPhone or iPad you can't see previous locations however – it's just a snapshot of where is your device right now. That's not ideal, but it's better than nothing. And if it

is close by, you may find that your friendly local plod is happy to take you around looking for it. (If it is in your front room, you may have just lost your MacBook down the back of the sofa.)

How to use Find My Mac to get your laptop back

Here's what you can do from the map view using the icons at the bottom of the page: you can remotely lock your MacBook ('Lost mode'), force it to play a sound or even erase its entire contents. The latter may be critical if your MacBook contains critical data. Every time you do one of these things, you'll receive an email giving details.

If you opt to remotely lock your MacBook (or any of the other devices), it will shut down and set a four-digit passcode of your choosing. It won't then reboot without the correct passcode.

Playing a sound is useful if you have just lost your MacBook and want to locate a thief as they make an exit, or even if you have lost it in the house somewhere. Choose this option and your MacBook will emit a loud high-pitched alert when next it connects to the web.

The final option is Erase Mac. This lets you securely erase all data and settings from your Mac. It also sets a four-digit passcode that allows you to regain access to your Mac if you ever recover it.

What to do if Find My Mac can't see your laptop

All of the actions outlined above can still be undertaken even if Find My Mac can't access your laptop. They'll just happen when the MacBook is next online. If you wish only to receive an email notification when your Mac does come online again, tick the 'Notify me when found checkbox'.

Locating a device via iCloud
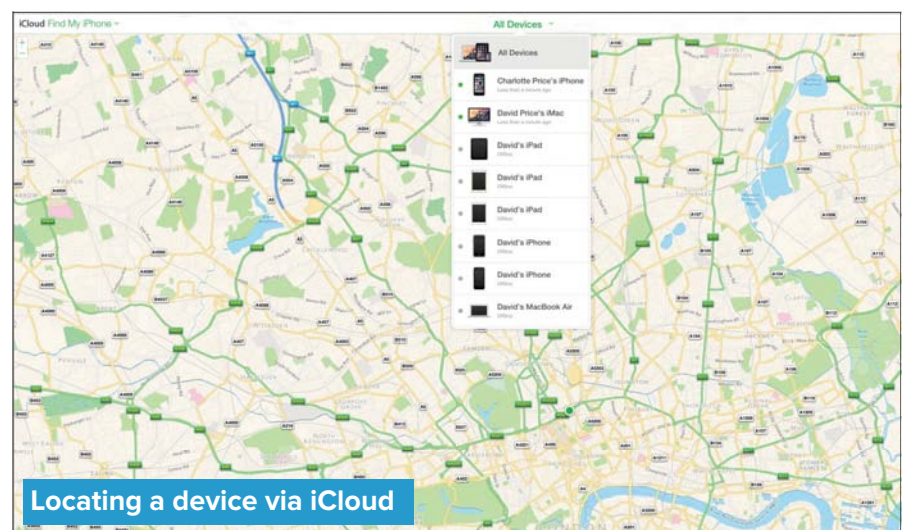
Guide to a complete Mac backup

Rob Griffiths explains the steps you need to follow to give your Mac a complete backup

Level 0: System Setup

My backup plan begins with my basic system setup, which may be different from yours. I keep very little data on the internal boot drive. My user's folder is on that drive, along with my most-used applications. But that's it; everything else is saved elsewhere. I even go so far as to use aliases (or symbolic links, if necessary) to move large data files off the boot drive for programs that don't let me specify a storage location. As a result, my boot drive is typically fairly empty – I'm using just 75GB of the 256GB SSD in my Retina iMac, for example.

So where does everything else reside? On an external RAID setup, complete with a spare drive in a drawer (in the event of a drive failure). This strategy protects my files well enough while I'm working. But as you'll often hear, RAID is not a backup solution. So how then do I back up my files?

I use a multi-drive, multi-location backup strategy, with the goal of ensuring that I won't ever lose a critical file due to equipment failure or natural disaster.

Level 1: Time Machine

Time Machine is my first line of defence, and the only aspect of my strategy that includes support for older versions of files. It's the first place I go if I've accidentally deleted a file (user stupidity), or need an older version of something.

In order to keep the deepest version history possible, I skip a fair number of file types from my backups. You can have Time Machine skip certain files or folders by clicking the Options button in the Time Machine system preferences panel, then clicking the plus sign to add those files you'd like Time Machine to skip.

In addition to the system files and applications, what other types of things do I skip? I don't back up any ripped DVD or Blu-ray movies, again because there's no need for versioning, and they're backed up at other levels of my strategy. I also exclude any Parallels or Fusion virtual machines as both apps include their own snapshot features for versioning, and I back up the full virtual machines elsewhere.

By not using Time Machine for these types of files, I've freed up hundreds of gigabytes of space that can be used for multiple versions of my data files. I do, however, have Time Machine back up my iPhoto and iTunes libraries, along with all my work and personal data files. These are files that I want to be able to get back quickly, or access older versions with a minimum of hassle.

Tip: If you add an OS X-owned folder – such as the top-level System folder – Time Machine will ask you if you'd like to skip all system files. I reply yes, because Level Two of my strategy takes care of my system files. When you say yes, Time Machine shows 'System Files and Applications' as being excluded from the backup.

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Level 2: Boot clone

A boot clone is not a perfect copy of your favourite pair of cowboy boots. Rather it's a perfect copy of the hard drive that boots your Mac. Having a clone is critical – if your boot drive ever has a fatal error, you can connect the clone drive and reboot, and be back where you were with a minimum of disruption.

There are many ways to make a boot clone. I use Carbon Copy Cloner 4 since creating a clone is a simple point-and-click operation.

As I don't like leaving a clone drive connected all the time, I have a bare drive

that I insert into a Sabrent 3 drive dock on a regular schedule.

I update my clone about three times a week. Because the vast majority of my files live on the RAID, it's not critical that the clone is current to the minute. Using CCC4, I created a clone task that's set to run on disk mount. Updating it is as easy as dropping the bare drive into the drive dock; CCC4 sees the drive mount, and starts updating the clone. Typically, the task takes about five minutes as only changed files are updated.

When the clone is complete, I remove the drive from the drive dock and put it back in its storage box for a couple of days. If my boot drive ever fails, I know I can get back up and running in a hurry.

Level 3: Paranoid backup
I call this level my paranoid backup, because I always think something can go wrong with my backups. My paranoid backup is another full backup of my files, to supplement both Level 1 and Level 4 backups. I use the Sabrent drive dock and CCC4 for this backup as well; when I insert the Paranoid disk, CCC4 fires off the backup task.

One very useful feature in CCC4 for the paranoid backup is the ability to 'chain' backup tasks. Because this is a full backup with files from both the RAID and internal hard drive, I have four separate backup tasks in CCC4. The first task is set to run on disk mount. The following tasks are set to run when the prior task completes.

So my paranoid backup is just as simple to run as my boot clone: I insert the Paranoid disk, and the magic just happens. When it's done, I remove the drive and return it to its storage location. I usually do this once a day.

Level 4: Offsite backup
The best backup strategy in the world is no good if all of the backups are stored with the computer. You need to keep a set of files in a separate location in case your primary location is visited by fire, flood, theft or other disaster. In my case, that means sending a backup disk to my wife's office.

Our offsite backup is also done on a bare disk, inserted into the Sabrent drive dock. As with the Paranoid backup, it runs via CCC4 on drive mount, and chains together a number of separate tasks to perform a full backup.

My wife brings the drive home once a week, I update the backup that evening, and it goes back in the morning. So yes, we have one night's exposure to a disaster while the disk is home. But I keep the disk elsewhere that night, so at least it's nowhere near the computer.

Level 5: Double-paranoid backup
This is an automated backup to our Time Capsule of critical work and personal files that runs four times a day via a scheduled task in CCC4. It's fully automatic; I see the OS X notification when the backup finishes, but that's the extent of my involvement in it.

In addition to copying to the Time Capsule, I also copy from the Time Capsule. I use a set of scripts to back up our web sites to the Time Capsule. These backup files are then copied to a backup folder on my RAID three times a day, so that they are also backed up.

Level 6: Cloud backup
If you've read this far, you're probably wondering why I don't just back up everything to a cloud drive somewhere and be done with it. There are a few reasons why I don't it my primary backup target.

I have a lot of data – at nearly 3TB, getting the initial backup done would take forever. I also don't like the thought of using my upstream bandwidth to update a backup on a regular basis. There's also a trust issue: This data is mine, and I don't want to rely on a third party to stay in business in order to get my data if I need it back. Finally, if I do have a major crisis, waiting hours (days?) to download 3TB of data to get back up and running is not my idea of a good way to spend my time.

Despite my general disinterest in a full cloud-based backup, I do back up some key files to the cloud. That way they'll be in yet one more place in the event of a major problem.

Although the cloud services encrypt your data, I'm still a bit uncomfortable trusting that there won't be an exposure somewhere along the line. So before I back up any files to the cloud, I first copy them to an encrypted disk image and then copy that image to the cloud (using a CCC4 task). That way, if someone does get a decrypted copy of what was on the cloud, my data will still be protected, as it was encrypted locally first.

Perhaps in the future when cloud drives are all 4TB+ in size, and our upstream connection speed is measured in gigabits per second, I'll be more comfortable with a primarily-cloud-based backup solution. Until then, I view the cloud as an additional element in my backup strategy, not a primary destination.

Other Macs
Although we have more than one Mac in the house, all of the key files reside on my primary iMac. The other machines have their data files backed up to our Time Capsule via Time Machine. Critical files are then copied out to a cloud drive on a regular basis (and encrypted first). However, I don't bother with a boot clone for the other Macs. If one of them were to have a disk failure, it'd be an inconvenience, but no single disk is so critical to us that it needs to be up and running immediately.

The final word
I'm probably an outlier in terms of backup strategy; I don't expect everyone to follow what I do. But you should have some kind of backup plan, and that plan should involve redundant backups, with at least one of them being stored offsite. You can accomplish this with Time Machine and an offsite backup, or Time Machine and a cloud service backup, or some other combination of here and there schemes. The important thing is to have copies of your data in multiple places.

With any luck, you'll never put your multi-site, multi-copy backup system to use. But if you do, you'll be very glad you went through the trouble of creating a comprehensive backup plan.

INKJET PRINTERS

They're remarkably cheap to buy, and have remained the technology of choice for casual print jobs. Cliff Joseph looks at five sub-£100 inkjet printers, plus one whose extremely low running costs could quickly turn the bigger price tag into a whole-life saving

CANON IP2850

★★⯨☆☆

£40 inc VAT • canon.co.uk

With a price of around £40, the Canon iP2850 must be one of the cheapest inkjet printers around. However, that low price makes for a pretty basic device compared to many of the multifunction printers that are now available. There's no built-in scanner or copier, and no Wi-Fi either, so you'll have to connect it directly to your Mac using one of those old-fashioned USB cables. And, of course, the lack of Wi-Fi also means that there's no option for printing to an smartphone or tablet.

Still, keeping things simple does keep the cost down, and means that the iP2850 is nice and compact too. It measures just 426mm wide, so you can easily sit it on a desk next to your Mac, or plug it into a router if you want to share it on your network.

Print quality is good for a printer at this end of the price range. Canon uses a special pigment-based black ink for text printing, which enables it to produce very smooth, sharp text output for letters and other text documents. Colour output is also good, and the iP2850 is perfectly capable of printing decent photos when it needs to. It may not be the fastest printer around, with Canon quoting speeds of eight pages per minute for text, and 4ppm for colour, but those speeds should be fine for light use at home rather than the day-to-day grind required of an office machine. We were initially a bit disappointed by the cost of Canon's replacement ink cartridges – especially as the three coloured inks are combined together in a single cartridge, which means
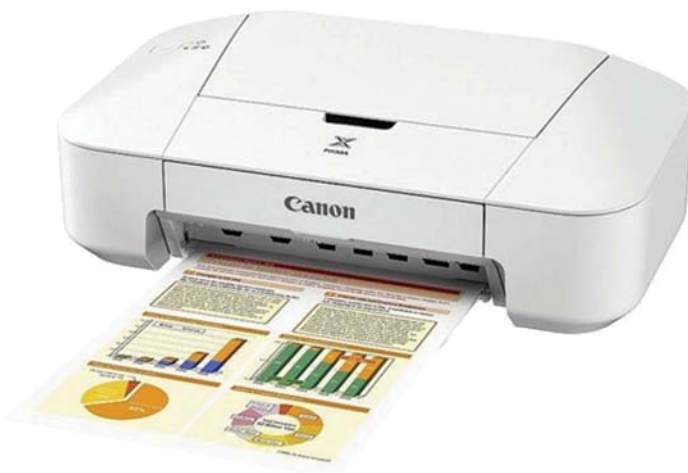
that you have the replace the entire cartridge even if just one of the ink colours runs out.

Fortunately, the cartridges have come down in price quite a lot recently, and the high-yield colour cartridges now work out at a reasonable 5.3p per page. The high-yield black cartridges cost a little above average, working out at 3.6p per page, but the iP2850 is still a good option if you just need a basic, affordable printer for occasional use at home.

Specifications
Resolution 4800x600dpi
Mono speed 8ppm; colour speed 4ppm
High-yield black cartridge £14.50 (400 pages)
High-yield colour cartridge £16 (300 pages)

CANON PIXMA MG6450

★★★⯨☆

£90 inc VAT • canon.co.uk

The Pixma MG6450 originally cost £140 when Canon first launched it, but it's now widely available for around £90, so it represents a good option if you need a versatile, high-quality printer for use at home or in a small office.

It's a multifunction device that includes a 1200x2400dpi scanner and copier as well as 4800x1200dpi printing. It provides both USB and Wi-Fi connectivity, and you can use it with iOS devices too. The printer has some built-in apps of its own that allow you to print off photos from social media sites.

It's a bit on the bulky side, measuring 455mm wide, 369mm deep and 148mm high, so you'll probably want to put it on a table or desk by itself. However, the MG6450's wireless connectivity means that you can move it around easily enough, and its excellent print quality ensures that it will earn its keep.

Most desktop printers use four coloured inks – cyan, magenta, yellow and black (a colour model known as CMYK) – but the MG6450 uses five different inks. It uses the four standard CMYK inks for colour printing, along with a special pigmented black ink that is used for printing text documents. The pigmented ink produces extremely sharp, clear text, while the other four inks do an equally good job for colour and photo output.

Running costs aren't too bad either – at least for a printer that uses five different ink cartridges. If you use Canon's high-yield

cartridges, then straightforward mono printing costs a reasonable 2.3p per page. Colour printing is even better, as that works out at a below average price of around 6p per page.

The MG6450 is fairly speedy as well, as it can manage 15 pages per minute for mono printouts, and 9.7ppm for colour pages. Our only minor complaint is that the 100-sheet input tray is on the small side for a printer as beefy as this one.

Specifications
Printer resolution 4800x1200dpi
Scanner resolution 1200x2400dpi
Mono speed 15ppm; colour speed 9.7ppm
High-yield pigmented black cartridge (for text) £11.50 (500 pages)
High-yield black cartridge £10 (810 pages)
High-yield CMYK cartridges £11.50 each (715 pages)

EPSON ECOTANK L355 ★★★★½

£250 inc VAT • epson.co.uk

Epson's new Ecotank printers mark one of the few genuine innovations in inkjet printing to have appeared in years. Most inkjet printers can be bought cheaply, and the manufacturers make their profit by charging high prices for the replacement ink cartridges. Epson's Ecotank printers take a different approach. The printers themselves are more expensive to buy, but the ink is far cheaper, which means that the running costs are lower when spread over a period of two or three years.

The L355 model costs £250, which is high for an inkjet printer, but the device has a large ink tank bolted onto the side that holds enough ink – included in the price – for 4,000 pages in mono and 6,500 in colour. That should last you for about two years, and when you eventually run out of ink you can refill the tank using bottled inks. The black ink costs £8 for 4,000 pages, or an average of just 0.2p per page, which is far lower than any conventional inkjet printer. The cyan, magenta and yellow coloured inks cost £8 each but they should last for 6,500 pages, which works out at 0.4p per page, making the L355 excellent value if you do a lot of colour printing.

Other aspects of the printer's design are more conventional, but print quality is very good for text, graphics and photo output, and the L355 provides both USB and Wi-Fi connectivity for connecting to your Mac or home or office network. Epson's iPrint app allows you to print a wide variety of file formats from mobile devices, including Word and Excel files, as well as photos. The L355 even includes a fax capability, along with scanner and copier functions. It's not particularly fast for a printer in this price range – Epson quotes speeds of just nine pages per minute for mono and 4.5ppm for colour – but what the L355 lacks in speed it more than makes up for with its extremely low running costs.

Specifications
Print resolution 5750x1440dpi
Scanner resolution 300dpi
Mono speed 9ppm; colour speed 4.5ppm
Black ink £8 (4000 pages)
Cyan, magenta, yellow ink £8 each (6500 pages)

EPSON EXPRESSION XP-412 ★★★★½

£90 inc VAT • epson.co.uk

The Expression XP-412 is one of Epson's 'small-in-one' printers, which are designed to be as compact as possible for home users. It's certainly neatly designed, measuring just 390mm wide, 300mm deep and 145mm high, but it still manages to cram in a good range of features, including printer, scanner and copier as well as 100-sheet paper tray.

Text output is good – not quite as smooth and sharp as the perfect curves and lines you can get from some of the more expensive inkjet printers, but perfectly adequate for printing the occasional letter or school report. Photo output is better, producing bright, vivid colours with plenty of detail.

Epson's quoted speeds are on the optimistic side, and it seems that the figures of 33 pages per minute for mono pages and 15ppm for colour output are calculated on the basis of using the printer's lower-quality draft mode. We tested the printer using its 'normal' quality mode, and got far lower output figures of around 7ppm for mono and 4ppm for colour. To be fair, though, those speeds are still adequate for light use at home.

Pretty much the same applies to the XP-412's print costs. Epson's standard ink cartridges are not particularly good value for money, as they don't even provide 200 pages for either colour or mono printing. However, you can get a multipack containing high-yield cartridges for all four coloured inks – cyan, magenta, yellow and black – for about £50; using this will bring the cost per printed page down to about 2.7p for mono output and 8.3p for colour.

Those prices are a little above the average in the inkjet sector, but not massively so, and the compact design of the XP-412 and its support for Wi-Fi make it a good option if you only need an affordable printer for occasional use at home.

Specifications
Print resolution 1440x5760dpi
Scanner resolution 1200x2400dpi
Mono speed 7ppm; colour speed 4ppm
High-yield black cartridge £12.50 in multipack (470 pages)
High-yield colour cartridge £12.50 each in multipack (450 pages)

HP ENVY 4500

★★★½☆

£49 inc VAT • hp.com/uk

With a price of just £49, the HP Envy 4500 is one of the most affordable multifunction printers currently available. It's quite neatly designed too, with a compact, low-profile design that measures just 120mm high and 445mm wide, so you can easily sit it on your desk or on a convenient shelf.

The Envy 4500 also manages to include an impressive range of features for such a low-cost device. It provides both USB and Wi-Fi connectivity so that you can share the printer on a network. It even includes double-sided printing – a feature that is rarely found in low-cost printers such as this.

Print quality for text and graphics is good, and the Envy 4500 is more than adequate for printing out letters or the kids' schoolwork. Its photo output isn't dazzlingly bright or fabulously colourful, but that would be a lot to ask from a printer in this price range, and you can still get decent results if you don't mind using higher-quality glossy papers. It's not particularly fast either, although speeds of about eight pages per minute for mono and 5ppm for colour output are still fine for light use at home.

The Envy 4500's running costs are something of a mixed bag, though. If you buy HP's high-yield tri-colour ink cartridge, then colour printing works out at a fairly reasonable 6p per page on average. The high-yield black cartridge isn't such a good deal, and costs something like 4p per page on average, which is well

to the top of the range for inkjet consumables. However, the Envy 4500 also allows you to sign up for the 'instant ink' subscription service that HP has introduced. Instant ink lets you print a fixed number of pages each for month for a flat-rate subscription fee starting at just £1.99 a month. That can save you up to 70% on your normal printing costs, according to HP, so it's worth checking it out to see whether it can save you some extra cash.

Specifications
Print resolution 1200x600dpi
Scanner resolution 1200dpi
Mono speed 8ppm; colour speed 5ppm
High-yield black cartridge £20 (480 pages)
High-yield colour cartridge £20 (330 pages)

HP OFFICEJET 4630

★★★½☆

£69 inc VAT • hp.com/uk

HP's OfficeJet printers are normally intended for use in businesses and larger offices, but the OfficeJet 4630 is a less expensive model designed for smaller offices or home workers who still need a reasonably fast and versatile printer.

Priced at just £69, the OfficeJet 4630 manages to include all the main features that you would need from a multifunction office device, including a printer, scanner, copier and fax machine. There's an automatic 35-page document feeder as well, so you can quickly scan or copy multiple documents all in one go, and it supports two-sided 'duplex' printing for business documents.

The printer includes both USB and Wi-Fi connectivity for your home or office network, and comes with HP's own ePrint feature for mobile devices. There's no Ethernet port, though, so the OfficeJet 4630 won't be suitable if you have a wired network in your office.

Print quality is good, although the 4630's text output can't match the near-laser smoothness of some of the more expensive models in the OfficeJet range. It's still fine for general office use, though, and print speeds of 8.8 pages a minute for mono and 5.2ppm for colour should be fast enough for smaller offices.

The OfficeJet 4630 is a good deal if you need to do a lot of colour printing for presentations or marketing materials, as its

three-colour high-yield cartridges offer printing costs of about 6p per page, which is quite competitive. Oddly, though, the high-yield black cartridge works out at around 4p per page for ordinary mono printing. That's undoubtedly above average for mono printing, so the OfficeJet 4630 won't be the best choice for people who just need to print lots of plain text documents. The cost of the black inks might also be HP's way of trying to get you to sign up for its new 'instant ink' subscription service – which can be a good deal for business users.

Specifications
Print resolution 1200x600dpi
Scanner resolution 1200dpi
Mono speed 8.8ppm; colour speed 5.2ppm
High-yield black cartridge £20 (480 pages)
High-yield colour cartridge £20 (330 pages)

Reviews

Photos for OS X

Macworld

PREVIEW

In June 2014, Apple announced that it would stop development of its Aperture and iPhoto apps and offer a single photo app in their place – Photos for OS X. Developers have been given their first glimpse of Photos, as it's bundled with the beta version of OS X 10.10.3.

Design

The app has inherited some design elements from Apple's latest operating system, as well as from iOS's Photos app. For example, there's a measure of transparency near the top of the window, reflecting the images behind it rather than the desktop. Toolbar items bear Yosemite's thinner design, and you'll find buttons that provide you with different avenues for viewing your content – Photos, Shared, Albums and Projects. (An Import button also appears when you've connected a compatible camera, mobile device, or media card.) They shake out this way.

Photos: As with Photos for iOS, you can see your images and movies organised in Years, Collections, and Moments views. In the highest level Years view, you find tiny images all created within a particular year. Click and hold on a thumbnail and you see a larger thumbnail. Click and drag and you can scrub through these thumbnails to locate the image you're after.

Shared: This serves a purpose similar to iPhoto's Shared entry. After enabling iCloud Photo Sharing you'll see the photo streams you're sharing as well as any streams others have chosen to share with you. Unlike with iPhoto's shared albums, Photos presents shared images in a much more elegant way – similar to something you might see on a well-designed photo sharing site.

Albums: As its name implies, click Albums and you'll find any albums you've created. But there's more to it than that. Unlike with iPhoto, Photos offers some preconfigured albums that appear in a row near the top of the window. These are All Photos, Faces, Last Import, Favorites, Panoramas, Videos, Slo-mo, Time-lapse, and Bursts – it's not difficult to see the strong connection between these libraries and the kind of images you can capture with your iOS device. Just double-click on an album to see its contents.

Projects: Should you have forgotten, projects are what Apple calls slideshows, books, cards, and calendars. When you create such a project you'll find it here. To work on an existing project, just double-click on it.

Import: Similar to iPhoto, when you connect a camera, iOS device, or media card/reader an Import button will appear. Click it and you can choose to import all new items on the connected device/media or just those images you select. If you have more than one device connected – your iPhone and an SD card, for example – you pick the source you desire from a pop-up menu and then import the images and/or compatible movies it contains.

If you prefer navigating your media as you did with iPhoto, that option exists in the form of Photos' Sidebar (which you invoke by choosing *View ➜ Show Sidebar* or by pressing Command-Alt-S). Do so and you'll see headings for Photos, Import, Albums, and Projects. The navigation buttons in the toolbar disappear when you expose the sidebar.

Viewing images

To view a photo at a larger size, just double-click on it. When you do so, you have the opportunity to mark it as a favourite (by clicking a Favorite button in the toolbar). Photos has dispensed with star ratings, however. Now you simply choose to mark an image as a favorite or not.

When viewing a single image, you can get and edit information about it. Just click the Info button and a window appears where you can add a title, view some EXIF data, see the image's location if it has been geotagged, add keywords, and add the identity of faces within the image. You can select multiple images, press Command-I to produce the Info window, and add keywords that apply to each selected image.

Editing your images

Photos, like the iOS version, presents editing as a collection of tasks. When you view an image and then click Edit in Photos' top-right corner you're presented with a list of tools – Enhance, Rotate, Crop, Filters, Adjust, and Retouch. Enhance does what it did before – takes a guess at what might look good and applies those changes. Rotate does exactly that in 90-degree increments. Filters offers up eight tasteful filters: Mono, Tonal, Noir, Fade, Chrome, Process, Transfer, and Instant. And you use Retouch to remove spots and blemishes (including sensor dust) with a resizable tool. Crop and, particularly, Adjust need more explanation.

Crop not only lets you cut away unwanted material by dragging corners and borders, but provides a wheel similar to the one in Photos

for iOS that you use to straighten your image to a grid. Or, if you like, you can click an Auto button and Photos will calculate the horizon line and straighten and crop the image for you, using the rule-of-thirds to place the important portions of the image within the frame. Within the Crop tool you can also choose an aspect ratio for your crop – custom, 16:9, 8:10, 5:7, and so on. Select a ratio and the image will be cropped accordingly.

Making adjustments

The Adjustments tool is one of the app's most intriguing features. The idea behind it is that many people don't want to spend time tweaking their images. They'd prefer to click *Enhance* and when presented with the results accept them as all that can be managed. Intuitive though Exposure, Contrast, Saturation, and Definition sliders may seem to some of us, they're confounding to many casual photographers. The application's designers set out to simplify the process while bringing greater intelligence to the app's editing tools.

When you click on Adjustments, you see three entries – Light, Color, and Black & White – that are controlled using 'smart sliders'. To make an adjustment in this view, just click somewhere in the thumbnail image below one of these entries and drag to the left or right. For example, if your image is too dark, click in the Light tool area and then drag right or left to brighten or darken your image.

This addresses your need to make a dark image brighter. But it's doing far more than just adjusting the image's exposure. As you drag to the right or left, a variety of factors change including exposure, highlights, shadows, brightness, contrast, and black point. And not always in a similar direction. Dragging to the right may increase the image's exposure but decrease its highlights, for instance. Photos is calculating the best look for the overall image rather than just dumbly making it brighter or darker.

About the cloud

Using iCloud storage is entirely optional. If you want to store your images locally and not have them beamed into the cloud, you can. All you need do is ensure that the iCloud Photo Library option is unchecked in the iCloud preference within Photos. Or, if you want your images both in the cloud and on your Mac, enable the Download Original To This Mac option, also within Photos' iCloud preference.

Project enhancements

Photos also spruces up iPhoto and Aperture's projects. The book creation tools are now more streamlined – hiding the layout options until you need them, for example – and adding a new Square book format. Compared to iPhoto, Photos in its current incarnation has lost some of the previous book themes but added a couple of new ones including Bento Box. Additional themes can be downloaded as they become available.

Slideshows can now be configured from within a drop-down window rather than propelling you into a full-screen slideshow window with a small slideshow window appearing within it. As with books, slideshows within the beta version have fewer themes with a couple of new additions. As before, you can export slideshows as movies.

Photos also offers an option for printing the panorama images you've taken with your iOS device. You can choose prints up to 36 inches wide. You can also order square prints if you've chosen to shoot images that way on your iPhone.

Moving from iPhoto/ Aperture to Photos

When you install Photos, you'll be offered the option to import your iPhoto library. (If you have more than one iPhoto library, Photos will ask you to choose one to import.) You can also import an Aperture library.

Opening one of these libraries in Photos doesn't duplicate your existing images. You won't find one set of images in an iPhoto library and another in a Photos library. But looking at the Finder, you wouldn't think so. Here's why.

When you launch Photos and it pulls images from your iPhoto library, a new Photos Library archive appears in the same location as your iPhoto library. And the Finder tells us that it's a bit bigger than the iPhoto library. But the truth is that it's not consuming that amount of space. The Finder simply reflects the size of the library as if it held all the original files, which it isn't as it's referencing the original images.

Yes, it's a bit confusing, but you can test it yourself. In Disk Utility, create a disk image with a capacity 25-percent larger than your iPhoto library. Let's say that your iPhoto library is 2GB and you create a 2.5GB image. Copy your iPhoto library to the disk image and then launch Photos while holding down the Alt key. Click Other Library and navigate to the iPhoto library on the disk image. Photos will launch and create a Photos Library archive.

Given that the disk image can hold just 2.5GB of data, you should be told there's not enough storage to complete the operation. And yet it works and there's the Finder proudly displaying two file sizes that exceed the capacity of the image. This tells you that the Finder is fibbing in regard to how much data each library really holds.

Additionally, iPhoto and Aperture don't become unusable after you've launched Photos. You'll be asked which app you'd like to use with your images. You can choose iPhoto, if you like, with the caveat that any edits you make in a particular app – iPhotos or Photos – will appear only within the app you used to apply them. So, if you convert an image in Photos to black and white and then open that same image in iPhoto, you'll see the unedited original colour version.

iPhoto events and Aperture projects are converted to albums as neither of these items exist in Photos. Metadata including star ratings, flags, and colour labels will be transformed into keywords and become searchable in Photos. Other IPTC metadata such as copyright, contact, and content data is retained as part of the image, but it's not visible within Photos. Custom metadata fields aren't transferred to Photos.

Macworld's buying advice

We've had very little time with Photos for Mac, but our first impression is that the software hits a sweet spot for the casual-to-enthusiastic iOS and digital camera shooter. **Christopher Breen**

£149 inc VAT

Contact
- apple.com/uk

Read more
- tinyurl.com/p8mhczg

Specifications
OS X 10.9.5 or later; display with 1280x768 resolution or higher; requires 64-bit Audio Units plug-ins; minimum 6GB of disk space; 35GB of optional content available via in-app download

Logic Pro X 10.1

Tune into any of the most popular radio stations these days and it becomes evident that a producer has as much (or more) to do with a song's arrangement and presentation as the recording artist. While this has long been the case with hip-hop and electronic tracks, even the music performed by such mainstream artists as Taylor Swift would have far less impact without the ministrations of the behind-the-scenes producer.

This trend has not escaped Apple's notice as evidenced by the release of Logic Pro X 10.1. Although the free update includes a vast number of improvements and fixes, its target is clearly the producer and, more specifically, those working with elements of electronic music (which, again, is just about any of today's popular artists and producers). Here are some of the highlights of the latest version.

Give the (electronic) drummer some

One of the key new features of the last release of Logic Pro X was the Drummer track. This track intelligently generates convincing acoustic drum tracks using a variety of sounds recorded by real drummers. By adjusting the puck on an XY pad, you can change the loudness as well as the complexity of this track. You can additionally ask the drummer to add more fills, swing a bit more, and add or subtract portions of his or her kit.

With version 10.1, Apple has added 10 new drummers – or, more accurately, beat programmers. Rather than being equipped with acoustic drums, each drummer plays a drum machine. Like the 'real' drummers before them, e-drummers have their own kits, though these are comprised of sounds from a wide variety of drum machines – with sounds ranging from the classic to the contemporary (as well as entirely unique sounds). As with the acoustic players, you can direct your e-drummer to play more simply or with greater complexity via the position of the XY pad's puck, fill

less or more often, swing (or not), and add instrumental elements to his or her kit. Each drummer comes equipped with eight preset patterns, but you can create and save your own. Within the track's Smart Controls area you can choose from among a handful of patterns for each instrumental group (kick, snare, and claps; hi-hat and cymbals; and percussion, for example). You can also choose one of a couple of different styles for each.

If you'd like greater control over the kit, you have it in the form of the new Drum Machine Designer plug-in. Within this plug-in you can not only change the mix of the various drums and alter their tone in the Effects section, but also tweak each individual drum sound, adjusting such elements as pitch, length, envelope, distortion, body, presence, pan, and volume. (The controls you see depend on the kind of drum you've chosen.) And if you'd like to swap in an entirely different sound for a particular drum, just open Logic Pro's sound library and, from the Kit Pieces category, choose the kind of drum you're after (a kick drum, for example) and then select one of the available sounds.

Kickin' it

It's possible that there are people who enjoy creating drum machine parts by clicking individual notes

into place on a timeline or banging them out on a MIDI keyboard, but we don't. For those like us, Logic offers new Note Repeat and Spot Erase features for more easily creating drum and software instrument parts.

The idea is simple (and familiar, if you've used classic drum machines). Select a software instrument track or drum track, expose the toolbar, and click on the Note Repeat icon. Choose a repeat rate such as a quarter note, start recording, and press C1 on your keyboard. As long as your finger holds down the C1 key, the kick drum will be recorded for each quarter note beat. Repeat the process for other notes and sounds – press F1 to trigger the hi-hat and assign a value of an eighth note, for example. (You can also use this feature with the updated version of the free Logic Remote iPad app and with Logic's onscreen keyboard.)

But there's more to it. You can additionally adjust the rhythmic value in real time with a MIDI controller – a slider or wheel, for example. For instance, assign it to your controller's modulation wheel and wheel up as you record to increase the frequency that the beats are played.

Spot Erase is the other side of this coin. If you'd like to remove parts from a currently playing software instrument or drum track, enable Spot Erase and then

Macworld
★★★★★
EDITORS' CHOICE

hold down the key that triggers a particular note or sound as it plays. You might, for example, find the constant eighth note click of a hi-hat track to be too static. To put holes in that track, hold down F1 for those notes you'd like to remove as the track plays.

Mind over MIDI

In line with expanding Logic's drum palette, Apple's Logic team has enhanced the MIDI tools producers and artists will use to input and edit their electronic drum parts. This takes place in Logic's Piano Roll (read: MIDI) editor.

The editor has been expanded in a variety of ways. First, the names of electronic drums now appear in the editor rather than simply as note names (C1, D2, and so on) or piano keys. This makes it easier to find exactly the sound you'd like to edit. There's also a new Collapse Mode, which, rather than displaying every note value across the spectrum, shows you only those notes that have data assigned to them – C1 for the kick drum and D1 for the snare, for example, but not G1 and A1 if no notes appear on those lines. If you've ever spent time scrolling up and down through a tall MIDI track to find just the note values you want, you'll appreciate this feature.

The editor now includes a Brush tool that, when selected, lets you 'paint' in notes much like you'd splatter drops of paint on a canvas. This could easily result in chaos except for the tool's ability to constrain notes by scale. You can, for example, brush in just those notes that make up a C minor blues scale. You can then select a group of notes, define them as a brush pattern, and then brush in that same pattern elsewhere. This can be an easy way to create rudimentary harmonies when brushing over a group you've already created. Then just edit or adjust the pitches that don't harmonise well.

Making it Mello(tron)

The latest Logic isn't entirely about drums and beats. For those from the Old School there are the new Mellotron instruments. Popular in the late 1960s and early 1970s (Paul McCartney opened *Strawberry*

Fields Forever with a Mellotron part), this was a keyboard instrument that played short tape loops of flutes, strings, brass instruments, and voices. It's a distinctive (and, for some of us, familiar) sound that's now part of Logic Pro X. With this instrument you can blend two different Mellotron sounds – Boys Choir and Flute, for example.

There are over 200 new synth instrument sounds in this release as well. Many of them use MIDI plug-ins and track stacks to create rich (and sometimes rhythmic) sounds. You'll find them largely within the Synthesizer and Arpeggiator groups.

Bucket list

And then there are the "I wish it did…" features that not every musician or producer absolutely requires, but make for less tedious work. For example, there's region-based automation. You've always been able to automate an entire track – record a track's volume change over time or record the motion of a modulation wheel to increase the speed of a Leslie effect to an organ part, for example. But you can now embed automation into individual regions within a track. If you move that region to a different part of your track, the embedded automation moves with it. And you can do this for multiple regions throughout a track. This doesn't preclude you from also adding automation to the entire track, as that feature remains.

Logic Pro also includes a new Time Handles feature that affects MIDI notes. With it you can select a group of notes in the Piano Roll editor and expand or compress them to take up more or less time, respectively. You might, for example, have a percussion pattern that takes up one measure. On second thought you decide that you'd like it to run at half that speed for two measures. Rather than rerecord it, you can instead switch on Time Handles, select the notes within the pattern, and then drag a handle that appears on the right border of the selection to drag it to the end of the next measure. The pattern expands and slows to half its original speed, but the relative rhythmic relationship

between the notes doesn't change. The second note will still be half the duration of the first, for example.

While it's not something that everyone will care about, we're pleased to see the new Smart Quantize feature as a keyboard player that occasionally adds a flourish of notes as they play. But, like just about every other musician on earth, we sometimes like to correct my timing by quantizing a part (which forces notes to a rhythmic grid so they play more in time). The problem is, if you quantize to something like a 16th note grid, 128th note flourishes are turned into unmusical blocks of notes. MIDI drummers can have the same problem with rolls and paradiddles. With Smart Quantize switched on, Logic recognizes these note-rich passages and improves their timing while maintaining the intended roll or other flourish. Also, the length of notes in-between quantized notes are compressed and expanded proportionally to retain the relative legato of the phrase. In short: quantization that feels human.

And so much more: the ability to have more than one drummer track in a project, real-time fade rendering, a redesigned compressor plug-in with Retina-ready interface, the ability to create custom plug-in menus, Command-click to unmute or unsolo all channels, and improved stability.

Macworld's buying advice

If you create electronic music, this is a must-have update. And even if you're a musician or producer less interested in electronic enhancements, it's worth it for the many improvements and fixes that aren't marquee features of this release. **Christopher Breen**

TP-Link TL-WA860RE

Everyone expects a good internet connection everywhere these days, so weak Wi-Fi signals, dead spots and slow connections must be banished. If you have a large house, or want wireless coverage right to the borders of your property, a Wi-Fi extender could be what you need. It's important to note that this isn't a powerline networking plug: the TL-WA860RE simply takes Wi-Fi signal from your router and re-broadcasts it. It uses the mains only for power – not a network connection.

What surprised us was how easy it was to install. You plug it in somewhere near your router where the signal is strong. Then it's a simple process of pressing your router's WPS button and the corresponding button on the WA860RE. Less than 30 seconds later the two devices had paired and the router's signal was being repeated.

If your router doesn't have WPS, you can use the well-written instructions to manually configure the adaptor with your Wi-Fi settings. Once programmed, you can relocate the adaptor to another socket further away from your router: not at the edge of it's coverage but where the signal is still strong enough. An LED on the front tells you whether it's too close, too far or just right.

Thanks to a mains pass-through socket, you can plug the adaptor in anywhere, even if the mains socket is already in use. Just as useful is the wired ethernet port

on the bottom, which you can use to provide an internet connection to a games console, Blu-ray player, TV or other networking device that lacks Wi-Fi. If you have more than one such device, you can buy an inexpensive Ethernet hub and attach that to the TL-WA860RE instead to multiply the number of ports.

Two external, rotating antennas mean the TP-Link TL-WA860RE isn't the sleekest or most compact extender. However, you'll soon forgive this when it delivers a Wi-Fi signal to areas that were previously bereft of wireless internet.

Performance

We plugged in the adaptor to a socket on the back wall of our test house, with the router some 10m away at the front. We then ran our usual file transfer test from a shed at the bottom of the garden, roughly 20m from the TL-WA860RE (30m from the router with a wall and two sets of doors in the way).

Using our Sony laptop's built-in 802.11n Wi-Fi (a basic 1x1, 150Mb/s radio on 2.4GHz) we saw good signal strength and, as far as the laptop was concerned, it was still connected to the BT Home Hub 5: there's no need to connect to a different network, nor enter a password.

Transferring the 977MB file took 11 minutes, 24 seconds, equating to 1.43MB/s (that's 11.44Mb/s). It's considerably longer than it took to move the file in the same room as the router. With the laptop roughly 3m away, it took only three minutes, nine seconds, which equates to 5.3MB/s or 42.3 if you prefer to work in megabits per second (Mb/s).

Chances are that you won't be copying large video files over long distances all that often, so it's arguably more relevant to talk about other tasks. With the TL-WA860RE turned off, we couldn't even get a web page to load in the shed due to the very weak signal from the Home Hub 5, but with it turned on we were able to browse at a normal speed and even watch HD YouTube videos

without constant buffering. TP-Link also sent us the new RE200 Wi-Fi Extender for review. It's just as easy to set up as the WA860RE, but doesn't have a mains pass-through. The benefit of the RE200 is that it supports 802.11ac on 5GHz, which in theory means speeds of up to 450Mb/s. Adding the 300Mb/s you get with 802.11n on 2.4GHz, and you get 'AC750'.

We used the same Sony laptop in the same position to test the RE200 on 2.4GHz and found its signal was considerably weaker than the cheaper TL-WA860RE. In fact, we struggled to get a strong enough signal to perform our file-transfer test, but when we did, it took 13 minutes, 27 seconds to copy the 977MB file. That's 1.2MB/s.

We will test out the transfer speed over 802.11ac when we obtain a suitable USB dongle, but as anyone who's used 802.11ac will know, it delivers great speeds only at short distances, so we're not expecting it to go faster. Whether the poorer signal is due to the RE200's internal antennas or not we can't say, but since the TL-WA860RE is cheaper and has the handy pass-through socket, it's clearly the better buy.

Macworld's buying advice

For many people, powerline networking adaptors will provide even better range and speed, but the TL-WA860RE quickly and easily doubles your Wi-Fi coverage and is affordable, too. **Jim Martin**

Macworld
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★★★★☆

TP-Link AV500

The TP-Link AV500 Passthrough Powerline Wi-Fi Kit (TL-WPA4230P) features all the bells and whistles you could want from a non-gigabit Powerline setup.

While Devolo has surged ahead with its gigabit Powerline in the form of the Devolo dLan 1200+ adaptors (tinyurl.com/pc8j8dh), TP-Link is sticking with the less-speedy, but probably all you need, 500Mb/s systems. These are becoming an increasingly popular way of creating fast home networks for smart TVs, games consoles and Sky+ and Tivo boxes that all are enhanced with a wired Ethernet network connection.

Setting up a Powerline home network is easy. Simply plug one adaptor into the power socket near your internet router, and attach the adaptor and router with one of the supplied ethernet cables.

In the second room – where you need the fast connection that Wi-Fi just isn't going to deliver – plug the other adaptor into another wall socket near the devices that need to connect to a network. Then link these to the second adaptor by ethernet cables. Job done.

TP-Link's AV500 Passthrough Powerline Wi-Fi kit is a speedy Powerline system that can also add a wireless hotspot to that second room. This isn't just a boost of your existing Wi-Fi service (if you have one). It's a new hotspot, so it's like adding another wireless router in the second room. It avoids all the signal drop-off you get through distance, walls, and so on.

It also features an integrated passthrough power socket that allows an additional device or power bar to be connected to the adaptor as though it were a normal wall socket – so in effect it doesn't use up a valuable power socket.

The TL-WPA4230P Kit is two separate adaptors that are boxed as a starter kit. The base unit, which you plug into your internet router, is the TL-PA4020P, with two ethernet ports. The second adaptor, which sits near your TV, Sky box and so on, is the TL-WPA4230P, with three ethernet ports and the Wi-Fi hotspot.

We like the number of ethernet ports as a rising number of home-entertainment systems are lost without an internet connection these days. Most Powerline adaptors feature just the one ethernet port.

The closest rival to the TP-Link AV500 Passthrough Powerline Wi-Fi kit is Devolo's dLan 500AV Wireless+ Starter Kit (tinyurl.com/kc2r6j2). This also has three ethernet ports on the second adaptor and a Wi-Fi function – although the base unit has just one, compared to the TP-Link's two.

Both the TP-Link and Devolo scored well on our real-world speed tests. You can forget about manufacturers' claims of 500Mb/s speeds. It's much more like 70- to 100Mb/s. But don't worry as all the Powerline makers use these theoretical maximum speeds in their product names, and 60- to 100Mb/s should be well enough even for streaming HD TV and movies.

Our first speed test checks out how fast the Powerlines can run in a less-than-real-world situation where the two adaptors sit next to each other, but it's a decent benchmark to begin with. The TP-Link AV500 scored a near 100Mb/s score, which is respectable.

In our real-world test where the second adaptor is installed in a second room two floors away from the router and base unit. Here the TP-Link scored a modest but acceptable 65Mb/s.

Finally, we tested the signal strength of the new Wi-Fi hotspot. Here it managed 54Mb/s, which is good considering it's not much slower than the wired speed.

The Devolo 500AV scored almost identical scores.

(If you want the very fastest speeds then check out the £159 Devolo 1200+, which cruised at 126Mb/s, or its cheaper sibling the £99 Devolo 650 (tinyurl.com/nc8muo3), which notched up 88Mb/s in the real-world test.)

The Devolo adaptors are a lot bigger than the TP-Link reviewed here, but work better in houses that have the power socket close to the floor or skirting boards as the ethernet ports are located at the top.

The TP-Link has its ports at the bottom, so isn't good for situations with low power sockets. As the speeds are similar this might be the only real deciding factor in choosing between the two systems – except for price, where the TP-Link is cheaper at £89 instead of £129.

Macworld's buying advice
The TP-Link AV500 Passthrough Powerline Wi-Fi kit is a nicely priced, and speedy set of fully featured Powerline adaptors. **Simon Jary**

Macworld ★★★☆☆

Elgato Avea

You're probably accustomed to paying a few quid for a new light bulb, so you're jaw is likely to drop when you read that the Avea will set you back £39. This is, however, no ordinary bulb.

The Avea is an 7W LED bulb with a class A energy rating. It's a screw-fit bulb, so you'll need an E27/E26 lamp for starters and you'll also need an iPhone 4s or later, iPod touch (5th generation), iPad mini or iPad (3rd generation or later) with iOS 7.1 or later.

While it's a standalone bulb, you can control up to 10 with one device, so there's plenty of scope for expansion should you want to mood light many areas of your home.

Setting the Avea up is simple – screw it into the lamp in which you want to use it, switch on the power and connect to it via the free app. The device uses Bluetooth and you connect the bulb just as you would with any other Bluetooth accessory.

Importantly, Bluetooth Smart means there doesn't need to be a constant connection for the Avea to work, meaning it can be switched on and off with a physical switch, saving your device's battery.

As you might expect, you can select a colour from a large palette for the Avea and leave it alone. You can choose from green, yellow, orange, red, purple, blue and white and adjust the tone to your liking.

That's the basics but there are also a number of 'scenes' to choose from which slowly flow between preset colours. They have cheesy names such as 'magic hour', but they work nicely.

The other mode is called 'wake-up light'. At a chosen time, the Avea will come to life to wake you up. This can be done with multiple bulbs as with the other modes and there's optional audio, which will come from your device.

Elgato's app works well but it is a little on the basic side. A key

problem we encountered is that the bulb can't just be white – the bulb is simply off if the solid white mode tone slider is bang in the middle and it goes either orange or blue depending on which way you slide it.

Macworld's buying advice
The Elgato Avea is a good and affordable buy if you want a single Smart LED bulb. **Chris Martin**

Macworld ★★★☆☆

Belkin Wemo LED Lighting Starter Set

Just like smart thermostats, there's another race to replace dumb electrics in your home: smart light bulbs. Belkin is the latest manufacturer on the scene.

The kit includes two bulbs: you can choose between bayonet or Edison Screw varieties. Each is rated at 800 lumens, which may not be as bright as your old-school incandescent but it's still impressive compared to many competing LED bulbs.

You also get a Wemo Link in the pack, which acts as a bridge between the bulbs and your Wi-Fi router. It's a small plug that you leave turned on in an area of your house with good Wi-Fi coverage.

Setup is simple using the free Wemo app, which is available for iPads. At least it should be simple. As with many wireless smart home products, you need to first switch Wi-Fi networks and connect directly to the Wemo Link in order to

configure it to work on your home network. That went fine, but once connected it found our bulbs and proceeded to update their firmware.

After the promised 10-minute wait, the Wemo Link failed to find the bulbs and only by quitting the app and unplugging and re-plugging the Link was the system able to communicate properly and work.

Fortunately, that was the only hiccup and the easy-to-use app allowed us to set the bulbs to work exactly as we wanted. You can install them anywhere you like: in a ceiling fitting or a desktop lamp.

You create 'rules' for the lamps to work and these can be for them to turn on and off at sunset and sunrise, or at times you choose. They can be named and controlled individually and you can even set a dimming period so the lamp fades in to your set brightness over a few minutes (or up to 30 minutes). You can also define a sleep period, so the bulb will turn off after a set time.

Macworld's buying advice
The Wemo LED Lighting Starter Set is a good introduction to smart lighting. The app is easy to use, and the Link plug has Wi-Fi so doesn't need to be connected directly to your router. **Jim Martin**

Bayan Audio SoundBook GO

Specifications
2x 35mm long-throw full-range drivers with neodymium magnets; 70x30mm passive bass radiator; 2x 7.5W stereo Class D amplifier; 70Hz to 20kHz (-3 dB) specified frequency response; 3.5mm auxiliary analogue input; CSR8635 Bluetooth SoC; 8.14Wh (3.7V, 2200mAh) lithium-ion internal battery; Micro-USB 5V charging port; 161x82x32mm; 482g

Macworld
★★★★★
EDITORS' CHOICE

This is the third chapter in the story of the portable Bluetooth speaker, by Bayan Audio. Each carries the title of SoundBook, and the £150 original can now be seen as volume two in size and price terms, with a larger SoundBook X3 the second to be published – and the most weighty at £250. And now we have the pocket-sized budget edition, the SoundBook GO, priced at £80.

All three follow a similar plot, with a front protective flap that folds underneath the raked-back body, so that opening the speaker feels like opening a hardback book.

It's a neat design that provides some protection to the front perforated grille if you should travel with it; and despite the backward slope, the speaker will never fall over once it's sat on its own cover.

To help reduce price, various economies have been made in construction and features of the SoundBook GO, when compared to the first editions.

For one, there's no built-in FM radio for simple sit-and-play music. Build and materials quality have been reduced by now making the unit entirely from plastic, rather than with the premium-feeling aluminium body of the other two SoundBook speakers.

Also removed is the textual display, a dot-matrix effect that shines through the grille to show which source is selected. The nearly hi-fi codec AptX is also struck from the features list, leaving the default SBC, plus MP3 and AAC, as potential wireless compression systems for carrying your digital music through the air.

To charge the SoundBook GO, you plug it in to a USB 5V adaptor. Instead, you'll have to borrow one from another device, or plug into a computer's USB port to recharge.

On top of the SoundBook GO are just three button: an on/off button, with volume + and – keys either side. A row of 13 tiny white LEDs forms a visual bar to show volume setting.

Inside the SoundBook GO is a pair of 35mm full-range drivers just behind the black grille, and these provide most of the speaker's sound. In addition there is a passive bass radiator at the back, a weighted blob suspended in a rubber diaphragm.

The GO box itself is fully sealed and airtight to increase efficiency and bass response, although that bass radiator means there is still a decent sense of low-frequency sound to prop up the otherwise rather limited little drivers. And the sealed-box principle can also mean a better damped sound, which won't boom needlessly at certain bass resonant frequencies.

Powering the speaker drivers is a 7.5W stereo Class D chip amplifier. Bluetooth reception and decoding is undertaken by an integrated CSR8635 chip from Bluetooth specialist Cambridge Silicon Radio.

In use we found excellent wire-free reception, perhaps helped by an all-plastic chassis that doesn't screen Bluetooth's microwave radio as much as metal-enclosed cases. Played from an iPhone, we found we could maintain a link without audible dropouts over a 10m range through a plaster wall.

Besides the Bluetooth connection, you can plug in to a green-coded 3.5mm minijack socket on the back for improved sound.

The speaker is powered by an internal 8.14Wh lithium-ion battery, recharged through a Micro-USB port at the back. The surround of this port glows red when charging, and green when charged. Bayan Audio specifies up to nine hours of music playback when connected wirelessly.

The GO is available in a choice of four colour finishes for its plastic body – red, blue, white or black.

The SoundBook GO is the smallest volume in the trilogy so far, uses cheaper materials, and has only two drivers against the X3 model's four. And yet we found the bottom-to-top overall sound quality of this speaker was more listenable than its £250 flagship forebear.

There could in part be a psychological factor at play here. The GO is smaller, and one doesn't expect equal or better sound from smaller speakers. Its lower price also sets a lower expectation threshold for quality.

But all that said, we found the Bayan Audio SoundBook GO to be an incredibly well-rounded little speaker. Its tonal balance was spot on for general music listening, as well as for spoken voices and talk radio, giving clear vocal intelligibility across a range of volume settings.

When playing music it didn't suffer the all-too-common tizz and graininess of low-cost Class D amplification, instead keeping treble relatively calm and untiring to the ear. Tasked with complex mixes and challenging rhythms the SoundBook GO remained in control too, and while we can't expect to hear much in the way of true fundamentals, bass lines remained clear.

There was only a mild drag in pace in the bass. That's admirable where some passive bass radiators can leave you with a sense, in musical timing, of the beat being dragged backward somewhat.

Macworld's buying advice

Bayan Audio has taken a leaf out of a good book on music here, making an affordable little speaker that's a delight to listen to. **Andrew Harrison**

Audio Hijack 3

Rogue Amoeba's Audio Hijack Pro has been a longtime favourite of many who wish to capture sound routed through their Mac – whether from apps or audio input devices.

In previous versions, the app offered a lot of power under the hood, but the way forward wasn't always clear. This should no longer be a problem as Audio Hijack 3 includes a template chooser. Just create a new session and you can choose the kind of task you'd like to perform – create a podcast or digitize an LP, for example. Select the task you'd like and click Choose.

When you do this, a session window appear, populated with the blocks necessary for the task you've chosen. In many cases you need do no more work than click the Record button that appears at the bottom left of the window and initiate any audio that you'd like to capture.

While this template chooser will be helpful in a lot of cases, there will be times that you'll prefer to create workflows of your own. That too is far easier than it once was.

Along the right side of the main window are Sources, Outputs, and Built-in Effects libraries. To the left is the work area. To configure a session, you drag in the elements from the libraries to make up your workflow. Those that should be connected – an input to an output, for example – do so automatically.

As with previous versions, Audio Hijack 3 lets you manipulate audio before it's recorded. For example, you've hung on to your vinyl collection and you'd like to digitize it. You're aware that records occasionally pop and click and you'd prefer to have those sounds filtered out. You can do that by inserting a Declick effect between the Source and Output block. Or you have a microphone that records only on the left channel and you'd like it to be mono across both the left and right channels. Just insert a Channels effect after the Input Device block and choose its Mono option.

And you're not limited to one source and one destination per session. If you're recording

Jump around The Template Chooser lets you jump into a project quickly.

a podcast with a multi-channel interface, for example, you can direct each channel to record to a separate file, which you can then mix in an audio editing app. Or you could record each channel (or multiple recording devices) to a single track, mixed together.

And speaking of podcasts, there's Skype and its integration. You could incorporate Skype into previous versions of Audio Hijack, but doing so was confusing. It's now much easier. Just drag in an Application block, configure it to record from Skype, drag in one or more Input Device blocks to record local audio sources, and have then all connect to a single Recorder block.

If you have the trial version, you'll notice that when clicking on a block, that block's options are revealed. Each block can be turned on or off, which is helpful when you want to compare a sound with or without an inserted effect or you want to monitor the audio playing in an app but would like the freedom to easily switch off monitoring.

This On/Off switch is also key to monitoring what your workflow will record before you commit to the recording. Turning off the Recorder block acts as a kind of record-enable switch. When you switch this block off and click the Record button, you'll hear the results of your workflow but not record it. This lets you make adjustments to your blocks before recording for real.

Apart from the On/Off switch you find other options here. For example, suppose you have more than one microphone – your Mac's mic and

an attached USB mic. To choose the mic you'd like to use, you'd click on the Input Device block and select your preferred mic from the Audio Device pop-up menu. Similarly, you can choose the output format for your recording by clicking on the Recorder block and selecting the setting from the Quality pop-up menu. You can also name and tag your recording in this expanded view. If you've added an Audio Unit effect, clicking on the block reveals its controls.

Not all block options are tucked away, however. The Recorder block displays two buttons that you can access without exposing the blocks options – Pause and Split. You might use the former to pause a long dictation session when your phone rings and the latter to separate tracks when digitizing an old LP.

Also like the previous version of Audio Hijack, version 3 has a scheduling component. Click the Schedule button at the bottom-right of the window and a Schedule window appear where you can request that Audio Hijack initiate a session at a particular date and time. You might use this feature to record an internet radio broadcast at the same time each week.

Macworld's buying advice

While Audio Hijack 3 certainly allows you to do some things you couldn't do before, much of the release is about making existing features easier to use. **Christopher Breen**

Anypass

As you may know, the power-duo of Yosemite and iOS 8 make moving documents between your Mac and iOS devices a piece of cake thanks to AirDrop, Apple's cool and useful peer-to-peer file sharing service. But AirDrop comes with a caveat: it's not supported on older Mac OS and iOS devices. To resolve this little conundrum, we've resorted to a number of hacks and alternatives, including Dropbox, Pastebot, and, our all-time favourite, emailing myself a file or photo on devices that don't support AirDrop.

Enter Anypass, an app that works on your iPad, iPhone, and Mac, whether it supports AirDrop or not, and offers AirDrop-like features for all your devices.

Anypass requires three pieces in order to work its magic: The Anypass app for iPhone or iPad, Anypass for Mac, and a Wi-Fi network. You pay £2,29 for each of the iOS versions, but the Mac version is free as a direct download from Icyblaze. Open the app on any device and, if you're connected to a Wi-Fi network, you'll be able to send and receive files with no further configuration required.

On the Mac, Anypass runs as a background application with an Anypass menu extra in your menu bar. You use the menu extra to access files transferred to your Mac from any device and to manage the app's preferences. Your preference options are limited and, while the Preference window displays the path where files transferred to your Mac will be stored, it's not obvious how you go about changing the location of transferred files.

The Mac version of Anypass is designed to launch at login, but given the way the app behaves you may want to keep it in your Dock and only launch the app when you need to use it. To access the app you either use a keyboard shortcut (Command-Shift-D) or move your mouse to the top of the screen. When you do, a small tray drops down from the top of the screen, revealing devices available for you to send files to. Dragging a file

from the Finder to one of the listed devices sends that file to the device.

While the tray is a simple way to get files to your devices, we found it annoying, as it appears anytime your mouse touches the top of the screen, whether you want to use it or not. So, opening a menu? Accidentally move your cursor to the top of the screen? Hello Anypass tray. A better, less obtrusive option might be to offer a preference that lets the app run in the Dock, so you can drag files there when you want to send them to another device.

There was one other significantly more irritating issue with the Mac app. All too often it required a quit and restart in order to locate the devices on the network available for sending files. A support request sent to Icyblaze didn't result in a fix – instead, the support tech also recommended that we quit and restart the app.

While bugs and the occasional typo plagued the Mac app, the iOS apps offer no such annoyances. Both worked without issue and made quick work of transferring files between devices. The iOS apps offer options for organising files within the app and for sending photos from your camera or photo library to other devices. Due to limitations in iOS, there is no way to select and send files created with other apps while you're in Anypass. But the app does include a built-in text editor you can use to send text files to other Anypass users and every app that offers the

'Open in Another App' feature can add files to Anypass, after which you can use Anypass to send those files to other devices.

Anypass for iOS offers a simple security feature to prevent unauthorised access to files you have stored in the app: you can create a passcode requirement for opening the app. But, while this will keep anyone from opening and viewing documents stored in Anypass, once the app is open and displaying the passcode screen it is possible to send files to Anypass without entering the passcode.

Macworld's buying advice

While the Mac version of Anypass is a little buggy, that bugginess doesn't limit its value. Anypass is an excellent solution for sharing files between your non-AirDrop capable devices, making it the simplest way to transfer files between devices with zero configuration required.
Jeffery Battersby

Send out Anypass for iPhone lets you select files on your phone and easily send them to your Mac or other iOS devices.

Macworld
★★★★★
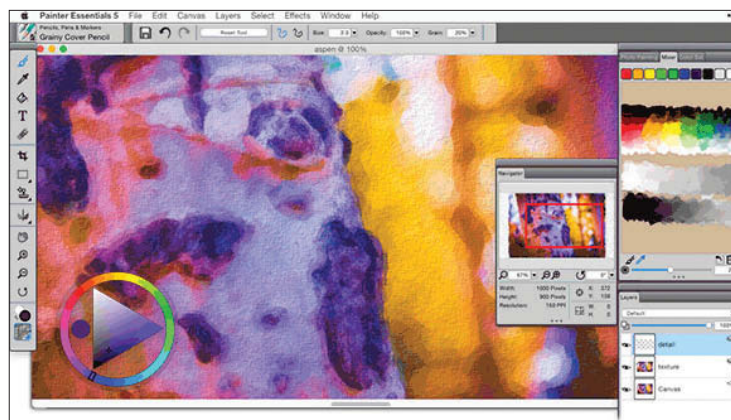**EDITORS' CHOICE**

Painter Essentials 5

Awakening from a seven-year slumber, a new version of Painter Essentials has finally hit the streets. Targeted at hobbyists, art enthusiasts and emerging photo painters, Painter Essentials 5 was redesigned to be fast and far easier to use. It includes 31 new brushes – including some of Painter 2015's hot new Particle Brushes – plus two new tools for creating mirror and kaleidoscope paintings, a vastly improved photo painting engine, a powerful brush-tracking utility, real-time effect previews, and more. Whether you're an aspiring artist or a photographer, there's a lot to like.

The 64-bit and Apple Retina-happy Painter Essentials 5 was rebuilt from the ground up using the new code base of its pro-level sibling, Painter 2015. Its simplified, floating-panel based interface exudes a friendly and uncluttered feel. A welcome screen helps those new to the app get started quickly – you can choose to create a new painting or drawing, open one you've already started, create photo art, pop open a handy QuickStart guide, or visit Corel online.

Also new is a Navigator panel for zooming in and out of a painting, as well as spatially orienting yourself or repositioning once you're zoomed in, and the same powerful brush-tracking utility that's in Painter 2015. This visualizes your calibrating brushstroke as a power curve that you can fine-tune with sliders in order to control the point in your stroke where you achieve maximum pressure, how fast the pressure increases, and more. You can also save brush-tracking settings as a preset.

It's a rare occasion when the consumer version of a pro-level program becomes more advanced than its sibling, but that's the case with Painter Essential 5's enhanced photo painting feature. Even those new to the program can create an outrageously realistic painting from a photo in no time flat.

The insanely simple painting process goes like this: use the Photo Painting panel to open a photo, pick

New interface Painter Essentials 5's new and simplified interface, shown here with a painting of an aspen tree.

from 11 painting style presets, and then click the Play button. Next, watch in amazement, and enjoy a beverage, as the program paints millions of brushstrokes right before your eyes. When the painting's finished, the Soft-Cloner brush activates itself, allowing you to paint over areas in order to restore details from the photo, especially handy for eyes and faces.

The whole photo painting process is fast, even on large file sizes. The only tiny downside is that there's no photo painting status bar, so it can be tough to know when the program is finished painting, especially when using the pencil-based presets with really thin strokes.

You can customise the photo painting in myriad ways, too. For example, you can add your own brushstrokes – with or without the tracing paper (original photo) visible – as well as experiment with a variety of effects with real-time previews (Color Overlay and Quick Warp effects are new in this version). The auto-tracing feature works in a similar three-step fashion, and is loads of fun for the young or young at heart.

Painter Essentials 5 has 31 new brushes, for a grand tally of 126. (In comparison, Painter 2015 has 806, though at a price point of £315, you pay for them.) The Brush panel opens to reveal 12 brush categories with a handy row of recently used brushes perched up top and a nice brush tip preview gracing the bottom of the panel.

Among the new brushes are a subset of the mind-blowing Particle

Brushes that debuted earlier this year in Painter 2015, which you can use to create realistic fur, fabric, and so on. These brushes work according to the laws of physics and, when you paint with them, a bubbling array of speckled particles emanates from the brush tip to produce random and chaotic patterns, lines, and colours as you move or hold your stylus in place (a stylus is the pen used with digital drawing tablets, like those from Wacom).

Corel's software also has new Jitter Brushes, two new tools for creating a mirror and kaleidoscope painting, a variety of tools for transforming selections (think scaling, rotating, skewing, distorting, and so on), enhanced paper textures, and better support for Wacom digital drawing tablets.

Macworld's buying advice

If you've ever wanted to try your hand at painting, or if you're a photographer who's longed to turn a photo into a realistic painting (a viable product to sell in your photography business), then this is the program for you. While Painter Essentials 5 includes numerous and useful enhancements, its photo painting feature alone is worth £30. Besides, this is the only consumer-level program on the planet that gives you real-world painting power in digital form. **Lesa Snider**

Macworld
★★★★☆

Microsoft Excel for iOS

When we last looked at Microsoft's Excel for iPad, we found it to have a well-designed UI and most of the features of the desktop version. It was missing, however, some features such as the ability to print, though, it was still an impressive debut. The biggest issue, of course, was cost: you needed a £80 per year Office 365 subscription to create workbooks.

As of version 1.2 that restriction has vanished: Excel for iOS can now be used to create spreadsheets, for no cost at all. The only caveat is that you must sign in using a free Microsoft account. If you don't have one, you can register directly from the app's home screen. The form isn't overly complicated, though Microsoft does require a birth date and telephone number.

Once the account is created, you can log in and start using Excel. And you'll get nearly the same experience as those paying for Office 365. What can't you do with the free version? You can't customise pivot table styles and layouts (but you can't create pivot tables in Excel for iOS anyway); add custom colours to shapes; insert and edit WordArt; add shadows and reflection styles to pictures; and add or modify chart elements.

But everything else we tried worked fine. Creating, modifying, saving, printing, indeed whatever we asked the app to do, the free version worked fine. We were able to see an upgrade box only when we went to modify a chart we had created; beyond that, the free version was equivalent to the paid version we were using on another iPad.

If you want the premium features, you can get them via Office 365 Personal (one computer, one tablet, one phone) for £5.99 per month, or Office 365 Home (up to five of each device type) for £7.99 per month. You'll also get one terabyte of OneDrive storage, which can be used both in Excel and as a general cloud storage drive.

In addition to free editing, Microsoft has added Dropbox support to Office; enter your
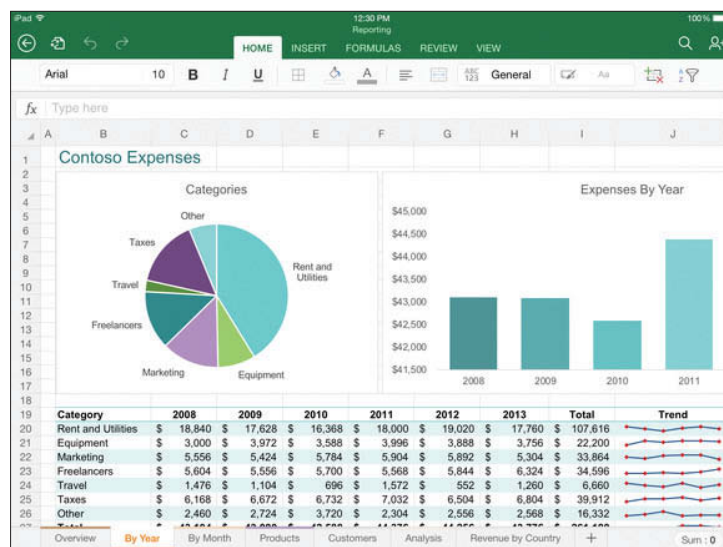
Dropbox account details, and you can work with the service as easily as you can with OneDrive.

Dropbox integration seems first-rate; you login to your Dropbox account, and it then appears in the list of Places you can save and open things, right alongside OneDrive. We were able to open, modify, and save my Dropbox spreadsheets without any issues at all.

Universally available

The app is also universal, and has been optimised for smaller screens. While this is true, and Excel looks great on an iPhone 6, the reality is that it's still hard to work on a spreadsheet on a phone-sized device. While we can see nearly as many cells on the iPhone as on an iPad those cells are much smaller (and thus, harder to tap).

There's also no room for the ribbon on the iPhone's screen; to call up the ribbon, you must first tap an Edit icon, which opens an edit area that takes up about a third of the screen. From there, you tap another pop-up to select, for instance, Formulas, and then scroll through the formula browser. On the iPad, the ribbon is always visible, and choosing a ribbon item only loses one line of the display.

In short, if you plan on doing much with your spreadsheets, you'll want to work with them on an iPad, not an iPhone.

Other areas of change

Previously, we noted that Excel for iPad lacked the ability to print. This was addressed in a prior update, and printing worked fine in our testing. You can also now edit unlocked cells on protected worksheets, which wasn't possible before.

The other limitations noted in our original review still apply: you can see and delete comments but not create or edit them; you can't name cells or ranges, create conditional formatting rules, or enter array formulas. You can't insert images from OneDrive (or Dropbox) either, only from the iOS device's photos. As before, Excel is still a one-thing-at-a-time app – if you're working with two or more spreadsheets, you have to fully close one to open the other one.

Macworld's buying advice

If you're looking for a powerful spreadsheet app for iOS that makes it seamless to work between a Mac, a Windows machine, and any number of iOS or Windows Phone devices, Excel for iOS is for you. Microsoft's new 'free to create' pricing model, which requires only a free Microsoft account, means that Excel will be truly free for most users. Unless you're creating and editing graphs in Excel for iOS, you'll probably find that the free version meets your needs. **Rob Griffiths**

Microsoft PowerPoint for iOS

In our previous review of PowerPoint for iOS, we found that although it had a lot going for it there were a few notable omissions. We also noted its dependence on a paid Office 365 subscription. Now at version 1.3, PowerPoint for iOS works on iPhones as well, and has adopted a new freemium model in which most of its features are available even to those who don't pay for Office 365.

It almost looks as though Microsoft turned our list of cons from version 1.0 into its to-do list – every major complaint has been addressed. Audio and video now play correctly, and you can add video (though not standalone audio) from your iOS device. You can now add and edit animations, and you can crop images. There's a Presenter View, so you can see your notes and thumbnails of your slides while giving a presentation. And you can even opt for Dropbox file storage as an alternative to Microsoft's own OneDrive.

These changes are welcome, and they make the app much more competitive with Apple's Keynote than it was previously. If you have an Office 365 subscription, you're in for a treat with the new PowerPoint. But if you don't, you'll miss out on a number of the best new features.
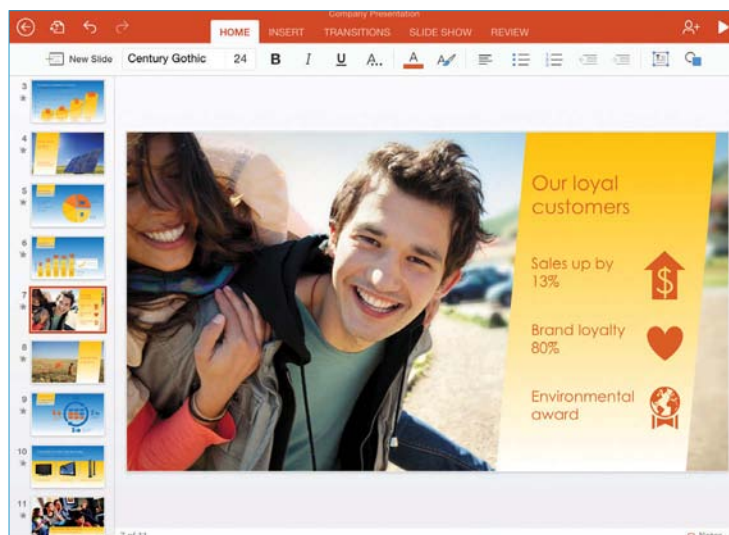

Free at a price

Like other Microsoft Office apps for iOS, PowerPoint offers three levels of access, two of which are free:

View Only: If you open the app without signing in to a Microsoft account, you can view and present (but not edit) documents.

View and Edit: Sign in with a free Microsoft account to create and edit documents (with some restrictions) and access OneDrive storage. You can create a new account in the app if you don't already have one.

Premium Features: Sign in to an account with a paid Office 365 subscription (or buy one via in-app purchase) and all features are enabled. As we detailed previously, the premium features are Presenter View; adding custom colours to shapes; adding and editing WordArt; applying reflections and shadows to graphics; adding and editing chart elements; and adjusting the shading of table cells, rows, and columns.

How useful PowerPoint's View and Edit mode will depend on the types of presentations you give and whether you need to create or edit them on an iOS device.

We rarely use any of the non-premium editing features such as WordArt and reflections, and if we needed them we could create or edit a presentation on a Mac. On the other hand, Presenter View is hugely important to us. We missed it sorely in version 1.0 and would be reluctant to give it up; it not only lets us see my notes while we control the presentation, but also lets us jump to any arbitrary slide by tapping its thumbnail. If your workflow involves using an iOS device only to create presentations but not to display them, you may have the opposite reaction.

Although version 1.3 addressed our biggest complaints, it's still not a match for the desktop version of PowerPoint. For example, you have limited control over transitions; and you can't create new themes, add SmartArt, or see your slides in Outline view. On an iPad, you can see comments added on a Mac or PC, but not edit them or add new comments; comments are entirely absent on the iPhone.

The only significant bug we found (if indeed it is a bug) feels like an advantage. Because we already had an Office 365 subscription but wanted to test PowerPoint's behaviour without it, we tried signing out. But that didn't disable any of the premium features. Neither did force-quitting the app, signing in using a different Microsoft account without an Office 365 subscription, restarting the iPad, or even deleting and reinstalling PowerPoint. In fact, the only way we could convince PowerPoint to treat us as a non-subscriber was to erase all the content and settings from an iPad, sign in to the App Store with a new Apple ID, download PowerPoint, and then skip signing in with a Microsoft account. In other words: once you've enabled a higher level of access, it is persistent.

On the other hand, we noticed that signing out from a Microsoft account also disabled Dropbox access, and we couldn't restore Dropbox access until we first signed back in to a Microsoft account. Since even a free Microsoft account will do for this purpose, that's a minor inconvenience.

Macworld's buying advice

If you take an Office 365 subscription for granted this is a great improvement. If, on the other hand, you approach it as a free tool, you get a decent, if limited, iOS app that can view, create, edit, and present native PowerPoint documents. **Joe Kissell**

Macworld
★★★★☆

Microsoft Word for iOS

Macworld
★★★★☆

Microsoft's app is an excellent word processor. It offers substantial document creation and editing tools, with an interface that's clutter-free, so creating and editing documents on your iPad is a cinch. The most recent update offers free editing for all, adds Dropbox integration and includes an app for your iPhone.

The biggest change to Word for iOS, and the missing feature garnering the most complaints when the app first shipped, is that you can now edit documents in the app regardless of whether you have a paid Office 365 account. Previously, without an Office 365 subscription, you had read-only access to docs. Now, while you are required to have a free OneDrive account in order to use the app for storing and accessing documents, a paid account is no longer required and editing features are intact.

While the free version has some limitations, the differences between Word's free- and subscription-based versions are subtle and many users may not feel the pinch of the free app's limitations. In short, if your word processing life consists of creating documents with standard text formatting, including selecting and changing a document's paragraph formatting or adding and making basic changes to tables, the free version will work perfectly for you. But if you work in a business environment you may find the limitations to be significant, depending on your editing needs or where your documents are stored.

Most features that require Office 365 access are deep-dive layout and formatting tools. It's important to note, though, that you can always make content changes to the text in any document, no matter which version you're using.

So what requires 'Pro' access? To start, pro features include page orientation changes, additions or reductions to columns and page sections, and change tracking. If you want to track changes, or accept or reject changes, you'll need Office 365, but, if change tracking is
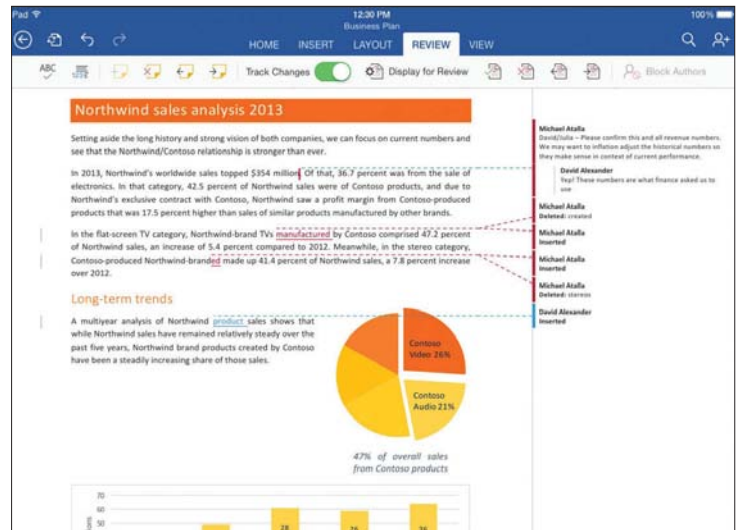
already turned on for a document, any changes you make are tracked – you just can't accept or reject changes. Word Art, custom text colours, adding reflections or other image editing options, advanced table and chart editing all require Office 365. And the final, very important detail: if you expect to be accessing files stored in OneDrive or Dropbox for Business accounts or on your own private Microsoft SharePoint, you'll have to have a paid account. Any documents accessed from these services open as read-only, with no editing options.

When you use Word on your iPhone you're faced with the same size limitations that plague other word processors and text editors for small iOS devices. But Microsoft has created a workaround that makes editing documents on your iPhone less painful.

Word for iPad has a streamlined 'Ribbon' (the toolbar you're used to using in every Office application) that allows you to maximise screen space while editing text. On the iPhone, this goes even deeper. The Ribbon on your iPhone is tiny and includes a few small buttons you tap to access all of the formatting tools you're used to. In addition to the streamlined Ribbon, there's also a 'Reflow' button that resizes the text, wipes away unnecessary document elements, and floats tools above the text. Admittedly, the text can look a little weird when you're working

on it in this mode, especially when you're working with documents that include tables and other images, but this mode makes no permanent changes to those document elements, it just allows you to focus on the text you're editing.

Microsoft has added Dropbox integration, which means you're able to add your Dropbox account to Word and open any Word documents you have stored there. While this is a welcome feature, we found that editing documents stored in Dropbox did not work as seamlessly as it did in OneDrive.

One of the handier features Word for iOS offers, even in the free version, is the option to simultaneously edit documents with others. So, files stored in OneDrive or in your Dropbox can be opened and edited at the same time. If the document is stored in OneDrive, an indicator at the top-right of the screen shows you how many people are editing the document and tapping on that button reveals a list of those editors. Sadly, any time we had more than one person editing a document, we kept getting messages to reload the document, which interfered with the actual editing of the document.

Macworld's buying advice
Spotty multi-user editing aside, Word for iOS is a continued improvement over the initial offering of the app.
Jeffery Battersby

Help Desk

Answering your questions about getting the most from your Mac and iOS device

iOS and Mac SOS

Solutions to your most vexing Mac and iOS problems

BY CHRISTOPHER BREEN

How to uninstall MacKeeper from your Mac

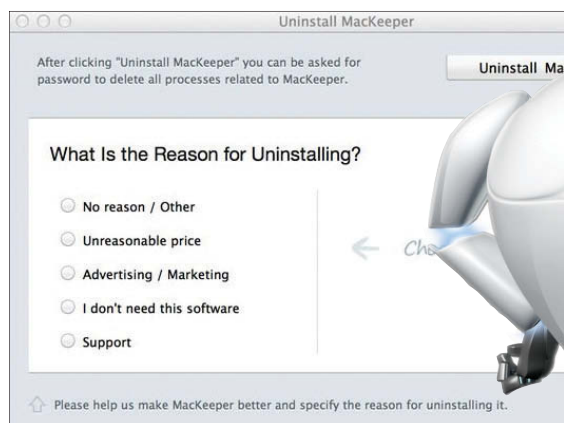**Q:** How do I get rid of MacKeeper?

Michael Downend

A: I won't go into why you'd want to. Some people have found MacKeeper useful, others not. But many people are confused about how to delete it.

Versions of MacKeeper made in the past couple of years are actually pretty easy to uninstall, but the process isn't entirely straightforward. If you click on the MacKeeper menu in the Mac's menu bar you won't find a Quit command, which might lead you to believe that it can't be quit. Force quitting doesn't seem to work either.

What you have to do is launch the MacKeeper app in the Applications folder and then quit it. (If this is your first time running it, no, you don't have to activate MacKeeper or sign on for any of its services. Just choose Quit from the MacKeeper application menu.)

When you've done that, drag the MacKeeper app to the trash. You'll be prompted for your administrator's password. Enter it and the MacKeeper app will move to the trash and a window will pop up and offer to uninstall the rest of its components. Click the Uninstall MacKeeper button (don't bother selecting an option about why you're doing so if you don't care to). This should remove most of the files MacKeeper placed on your hard drive.

But not all of them. Although the window tells you that all MacKeeper-related processes will be deleted, one crumb remains.

A MacKeeper Helper folder isn't removed. You can find it by visiting this location: *youruserfolder/Library/ Application Support*. (To access this Library folder hold down the Option key and, in the Finder, choose *Go ➔ Library*.) Inside this folder is a NoticeEngine.plugin file. Go ahead and toss the MacKeeper Helper folder and this file will disappear right along with it. Empty the trash, restart your Mac, and MacKeeper will be gone.

How to remove MacKeeper Part II (the pop-up edition)

Removing the MacKeeper app from your Mac, along with its component parts may only be one piece of the puzzle. This question is typical of the follow-up email:

Q: But how do I stop MacKeeper notifications from popping up in the Safari and Chrome browsers and asking me to install it?
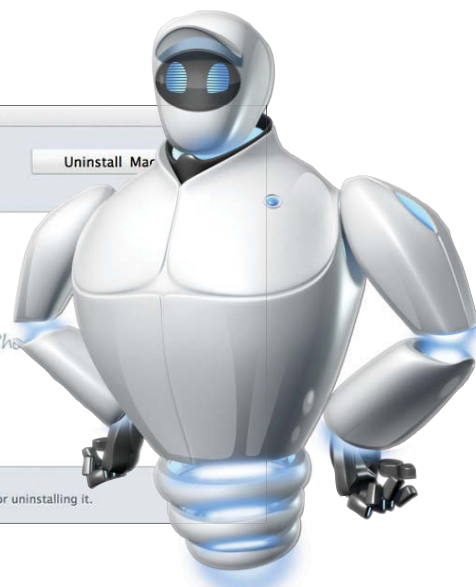
A: The first thing I'd suggest you do is remove any MacKeeper-related cookies in your browser. In Safari this means opening Safari's preferences, clicking the Privacy tab, and in the Cookies and Other Website Data area clicking the Details button. Search for MacKeeper in the sheet that appears and there's a good chance you'll find a cookie for mackeeper. com. Select it and click the Remove button. Vow to never visit the site again.

In Chrome, open its preferences and in the Settings window click the Show advanced settings link. In the Privacy area click the Content Settings button and in the window that appears click the All Cookies and Site Data button. Use the search field in the resulting window to look for mackeeper. Click Remove All.

My hope is that clearing these cookies will take care of the problem. If it doesn't, it's time to employ stronger measures. The first would be to download and run The Safe Mac's AdwareMedic (adwaremedic.com). It will scan your Mac, seeking out adware that may be causing your problem.

Still no good? On to an ad blocker. There are a load of these things out there and some are more refined than

> Versions of MacKeeper made in the past couple of years are actually pretty easy to uninstall, but the process isn't entirely straightforward

others. One variety will provide you with no controls whatsoever and block just about anything that smells like an ad – banners, pop-ups, videos, and so on. The problem with some of these is that they can take out good content as well as bad. Also, when employing such broad strokes, they block the less intrusive ads that help websites stay in business.

I would suggest, instead, that you use an ad blocker that goes after the really intrusive stuff – the pop-up ads and autoplay videos – and leaves 'reasonable' ads in place. This way you help support sites you enjoy while, at the same time, filtering out the elements that may prevent you from ever visiting the site again. Adblock Plus (adblockplus.org) has made efforts on this front and leaves 'acceptable' ads in place by default.

In the course of my research I've seen recent posts from someone claiming to work with MacKeeper. This person says that the pop-up ads are from an old adverting campaign and will not be continued. If all of this is true, the problem may take care of itself.

The case of the mysteriously sleeping MacBook

Q: This is a weird one, but I've run out of ideas. My MacBook Air works perfectly until I put it on the subwoofer that sits next to my desk. When I do that, the screen blacks out and I can't start it again. But if I lift it off the speaker and press a key, the screen lights up. This doesn't happen anywhere else I put the computer. Do you have any idea what's going on?
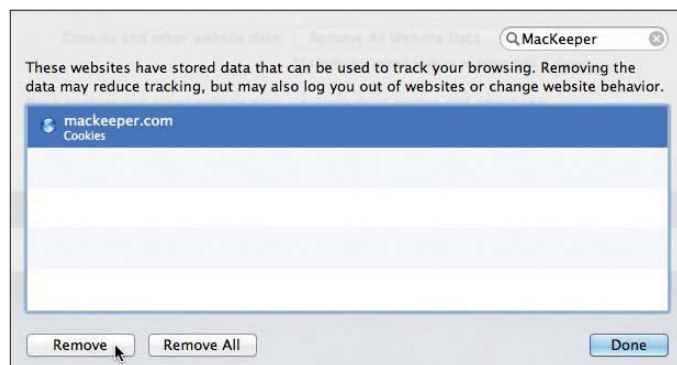
John Greeves

Goodbye ads
AdwareMedic can root out adware issue on your Mac.

A: I think I know the cause of this. Like all the best things in life, it's done with magnets. A little background:

When you close the lid on your MacBook it goes to sleep. And the reason it does is because a magnet inside the display bezel activates the sleep on/off switch (known as the Hall Effect switch). When you open the lid, the magnet's pull is gone and the switch wakes up the computer.

Inside a typical subwoofer is a large speaker, and that speaker bears a reasonably-sized magnet. I will guess that when you place your MacBook on top of the speaker, its magnet exerts enough pull to trip the Hall Effect switch in your laptop. And it won't wake up while sitting on the subwoofer because the switch believes the lid is still closed. That helps

explain why it wakes with no problem when you move it away from the speaker.

"Oh right…" the more cynical brand of reader hisses (which is challenging with words that have no "s"). "Magnets. Pfft…."

For those doubters reading along, may I direct your attention to Apple's own Mac notebooks: Magnets in devices may cause computer to sleep unexpectedly (tinyurl.com/oyejvuv). Within this enlightening document, we learn that even the small speakers found in the iPhone may be enough to put a laptop to sleep if you place it on the handrest. (Though, honestly, I've tried exactly that with my iPhone and MacBook Air and the laptop remains stubbornly awake.)

Take steps to avoid public Wi-Fi snooping

Q: What is the best way to secure my MacBook Pro from hackers when I'm logged into public Wi-Fi?

H. Thomas Staton

A: There are a few measures you can take. Let's start with over-sharing.

By this I mean that if you don't want to provide people access to your Mac, you should shut any doors that provide it. To start, go to *System Preferences* ➜ *Sharing* and turn off any sharing options

Delete the cookie Removing the MacKeeper cookie may stop the annoying pop-ups.

you have enabled – file sharing and screen sharing, for example.

Although it doesn't provide a way into all of your stuff, you may also wish to turn off iTunes sharing. On more than one occasion I've logged onto a hotel network, fired up iTunes, and found a load of shared iTunes libraries – some identified by the user's name. To switch off sharing, open iTunes' preferences, click the Sharing tab, and uncheck Share My Library On My Local Network.

Of course, if you're really concerned, you could also turn off Wi-Fi altogether when you're not using it, which would certainly bar any attempts at your stuff when you're not watching your computer.

That's all well and good in regard to keeping out intruders, but what about the data you're sending over the network? If you're looking for that kind of protection, consider paying for a VPN (Virtual Private Network) account. Log into a VPN and your data is encrypted as it passes through a secure tunnel, thus keeping the good stuff out of the bad guy's clutches. If you're interested in learning more, see Glenn Fleishman's How to surf safely with a VPN-for-hire (go.macworld.com/surf).

Or you could forego this Wi-Fi connection entirely and instead use another hotspot. Your iPhone could be just the thing if you've paid for a tethering plan. Yosemite's Instant Hotspot (tinyurl. com/q2rs3v5) feature makes this really easy. Your iPhone will appear under the Mac's Wi-Fi menu if the phone's running
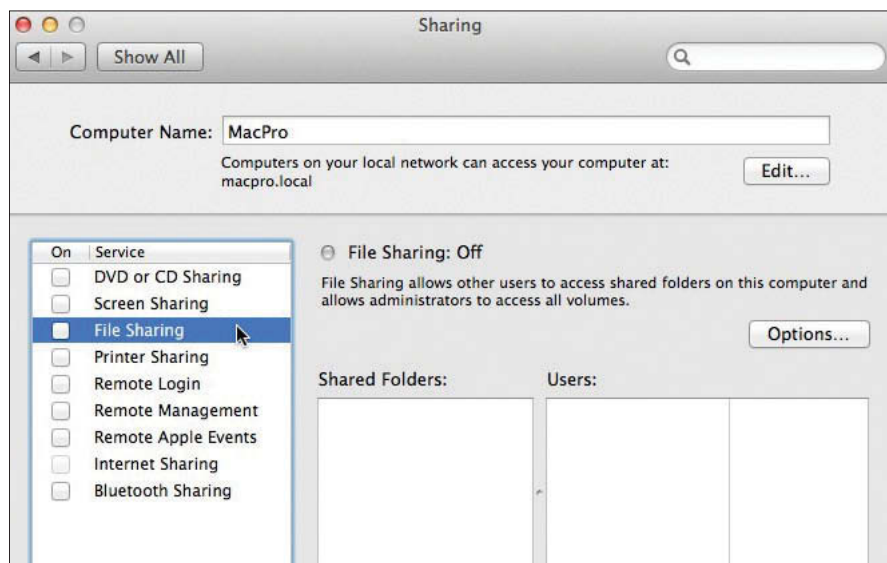
iOS 8 and you have a tethering plan. Just choose it and you're good to go.

And then there's the old-fashioned way. Purchase a MiFi device from just about any mobile carrier along with a data plan to feed it and you have a hotspot in your pocket.

How to restore a missing recovery partition

Q: **I installed a clean copy of Yosemite on an external hard drive, which I cloned to another Mac using the demo of Carbon Copy Cloner. When trying to troubleshoot something on that Mac I discovered that it had no recovery partition. Is there any way I can create one?**

Kai Peterson

Intruder alert If you're concerned about an intruder taking an unfair share of your data, turn off sharing.

A: There is. Before I walk through it I should tell you that this is expected behaviour. When Carbon Copy Cloner 4 clones a bootable drive to another drive, it doesn't create a recovery partition in the same way that the OS X installer does. Instead, it creates an archive of it and places the archive here: /Library/ Application Support/com.bombich.ccc.

This archive provides you with the means to install a recovery partition on the drive – and you can do it while booted from that drive. Launch Carbon Copy Cloner again, click Show Sidebar in the toolbar, and select the affected drive in the Volumes list. Information about it will appear to the right.

Click the Recovery HD button at the bottom of the window and a sheet will appear that explains something about the necessity of the recovery partition. If you'd like to install it, click the Create Recovery HD button at the bottom of the sheet. Carbon Copy Cloner will unmount the volume, resize the main partition to make room for the recovery partition, install the necessary software, and then remount the volume.

Recovery position Once you've cloned your drive you can easily restore the recovery partition with a click of a button.
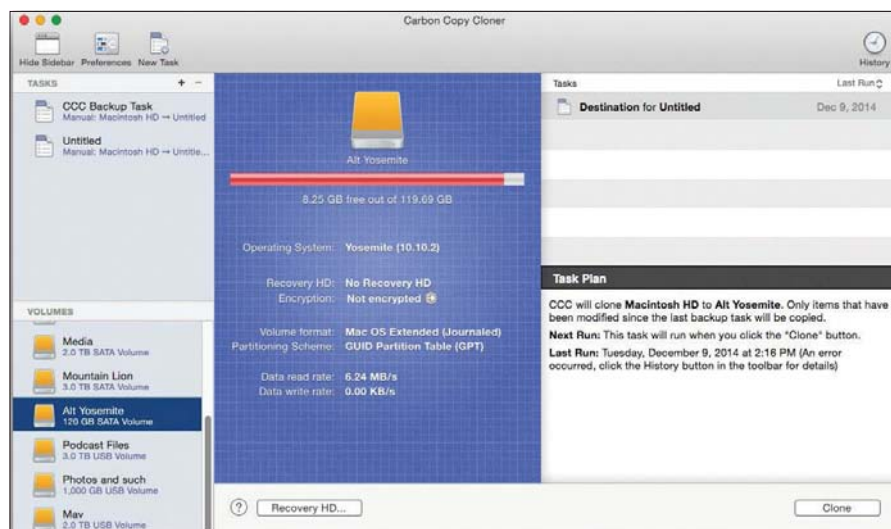
Apple declares war on free games

Apple has started looking with disfavour at the freemium model

I spend a little of my working life writing about games (in your face, 15-year-old me), and this means that iOS app developers often send me download codes so I can play their games for free. Many other iOS games, of course, are free for everyone. My wife cannot understand, therefore, why I also occasionally buy games.

Part of the reason I pay for games when I don't strictly need to is because I'm a weak man who is addicted to both playing computer games and shopping for computer games. Sometimes I desperately want to play a particular game even though it isn't of interest to Macworld's readers or is for other reasons unlikely to be covered on the site, and consequently it would be dishonest to request a free code from the maker. And sometimes a game is of immense interest to both me and the readers, but the maker doesn't respond to my email quickly enough and I get impatient and pay the money because what the hell, it's only £2.99.

But there are other factors at play, too. One is that I don't like the effect that free games, and the expectation of free games, is having on the games industry. It discourages risky or ambitious projects, which are unlikely to make back their costs in a market whose pricing expectations are set at zero. It also incentivises cheaply made clones riddled with the sorts of delays and psychological tricks that induce less savvy gamers to buy lots of in-app purchases (IAPs). Another is the belief that software developers need and deserve to be paid, and my preference to make that payment upfront rather than by subterfuge in the future, whether via IAPs, intrusive in-game advertising or the slow decline of an industry that I love.

For these reasons I like to feel that I am doing my own microscopic bit to help

Apple recently took a third step in its low–key campaign to give quality paid–for apps a helping hand in their war against substandard freebies

the situation, by paying a few quid to the people who make games I enjoy — and at the same time withholding my custom from freemium scammers who happen to be offering their games for free.

Then again, it doesn't look like I am, because Apple itself has started looking with disfavour on the freemium business model, or at least choosing to give that impression. Apple recently took a third step in its low-key campaign to give quality paid-for apps a helping hand in their war against substandard freebies.

After previously adding a warning note on apps (both free and paid-for, but let's face it: mostly free) that contain in-app purchases, and changing the wording from the 'oh my goodness what a bargain' allure of 'free' to the more ambiguous

'get' in certain contexts, Apple has now added and highlighted a curated section of non-IAP games within its App Store. These are called 'Pay once and play'. Which is an odd phrase, but a beautiful one in its own way.

I won't pretend to know what Apple expects or hopes to achieve with this, but it strikes me as a brave move. Freemium is an enormous money-spinner for Apple as well as for its ranks of app developer partners, and even this small gesture, coming from a voice as loud as Apple's, is a PR blow for IAP-reliant software.

It's not inconceivable that Apple will lose a little money as a result of these three steps, particularly if they harm public perception of IAPs as much as I would like them to; which would make the strategy sit alongside Tim Cook's famous outburst to a penny-pinching shareholder: "When we work on making our devices accessible by the blind, I don't consider the bloody ROI."

That remains a risk that Cook and his company are taking by siding with quality apps rather than the freemium ones. But I think this is a great strategy that will reap dividends for Apple as well as for the developer community in general. In doing this Apple can widen and highlight the gap in perceived and discoverable quality between its curated App Store and the piratical free-for-all that is Google Play. The volume of apps on the iOS is so ludicrously high that the only issue for users is discovery, and Apple should be applauded for winnowing out the chaff .

In any case I always thought it was odd that iOS users were so leery about paying for apps, considering the cheapness of the software and the dearness of the hardware it's run on. Paying a higher initial price in order to receive a higher-quality product? Isn't that what being an Apple fan is all about?

New & noteworthy

Ashleigh Allsopp presents the best new iPad and iPhone accessories

Denon Envaya Mini »

£99
denon.co.uk

It might be small but there's a lot going on inside the Envaya Mini. This speaker features Bluetooth aptX and a microphone for voice calls. Sound is provided by two 40mm drivers and a passive radiator. It's also water resistant and offers a 10-hour battery life.

Withings Activité Pop �

£119
withings.com

Withings wowed us with the Activité watch, but it's a pricey piece of kit. The Activité Pop is more affordable with its silicone strap and PVD coated case in a choice of colours. The analogue dials show the time and the progress to your daily goal, but it can also track sleep, and pairs with an iOS app.

Smarter WiFi Coffee Machine ʌ

£149
firebox.com

From the makers of the iKettle, the WiFi Coffee Machine is a smart, er, coffee machine. This shiny kitchen gadget will brew you a coffee (straight from the bean) while you're still in bed or as you walk in the front door. With the iOS app, you can select how much you want and it can even adjust the strength based on how well you slept.

Sonos Blue Note Play:1 ⌃

£220
sonos.com

To celebrate Blue Note Records' 75th anniversary, Sonos has released a special edition of its Play:1 speaker. Just 4,000 units will be available. The speaker features a graded cerulean blue finish created by seven gravity-fed atomizing spray nozzles.

Braven Lux ⌄

£90
braven.com

Braven has added a bit of glamour to its Bluetooth speaker range with the new Braven Lux, available in shiny metallic silver, gold or purple with a stylish grill design. In addition to being stylish, it's also practical with IPX5 certified water-resistance, portable with up to 12 hours battery life and the ability to charge your smartphone, and powerful with two drivers and a passive radiator.

CATWALK The best–looking cases for your iPhone and iPad

Ted Baker Folding Magnetic Cover for iPad Air/iPad Air
£40
proporta.co.uk

Case-Mate Slim Tough for iPhone 6
£15
case-mate.co.uk

Uncommon Deflector Case for iPhone 6 Plus
£30
store.apple.com/uk

Restore and reboot an old iPhone

Martyn Casserly shows how to get your iPhone back up to speed or restore it completely via a backup

Fixing a frozen iPhone

If you've ever watched the IT Crowd, then you'll be well versed in the mantra 'have you tried turning it off and on again?', which is the stock response used by Denholm Industries' IT department to solve all computer-related ills. In real life, well, strangely enough it's often the way to fix problems that occur on your iPhone, iPad, or even Mac. Modern electronic devices are very complicated, and can get themselves into a bit of a confused state from time to time. Resetting can clear out random problems that cause the device to get stuck in a loop, appear sluggish, or otherwise impair their performance. It's not a guarantee, but you'd be surprised how often it works.

For bigger issues, though, you might find that a trip to the Apple Store is in order, and this often results in a fixed device but with all the data wiped clean. To solve this it's vitally important that you

backup your iPhone either with iCloud or via iTunes. With that safety net in place, you can restore your phone quickly and easily, as we'll show you in this feature, alongside how to reset your iPhone when it starts to have problems.

Resetting an unresponsive iPhone

If your iPhone has become unresponsive, or you've shut it down and it won't turn on again, all is not lost. There is a feature on iOS devices that can be used when the normal modes of operation aren't working. Thankfully they are very easy to do, and require no tools or specialist knowledge. In fact you just need two fingers and about twenty seconds.

To reset your iPhone hold down the Home button (the one of the front of the iPhone) and at the same time hold down the power button (aka the lock switch) until you see the Apple logo appear on the screen. Now you can let go of the buttons and let the iPhone complete its start sequence. Hopefully everything should now be back to normal. If things are still not as they should be, then it might be a good idea to restore a backup, as some of your files could be corrupted and causing the issue.

Backing up your iPhone

If you want to start with a clean slate, then there are a few steps to take. First of all

Resetting can clear out random problems that cause the device to get stuck in a loop, appear sluggish, or otherwise impair their performance

make sure you have a backup ready. You can use either iCloud or iTunes for this. For iCloud go to *Settings ➜ iCloud ➜ Backup* and ensure that the feature is enabled. To see when the last backup was run look under the 'Back Up Now' option where the date and time should be displayed. If you haven't done one before you can tap the Back Up Now button and follow the instructions.

To use iTunes, you'll need to plug your iPhone into your PC or Mac using the charging lead. Click on the iPhone icon in the top left corner of iTunes, under the Play button, and then in the Backup section of the main screen, click the Back Up Now button.

How to perform a factory reset on an iPhone

To clear all of the data off your phone you'll need to do something called a factory reset. Bear in mind that this will wipe everything, so make sure you have backed up first.

This is what you want to do if you intend to completely erase the content on your iPhone before selling it, or passing it on to a family member or friend. This is how to perform a factory reset.

To reset your iPhone go to *Settings ➜ General ➜ Reset*, then select *Erase All Content and Settings*. You'll get a warning box appear, with the option to Erase iPhone in red. Tap this.

Enter your Apple ID password to confirm the action, then the iPhone will wipe everything off its storage and go back to the initial setup screen you saw when you first used the device.

Restore an iPhone from an iCloud backup

If having erased the content of the phone you intend to keep using it, you can restore the content to your handset from your backup.

With the factory reset completed you'll need to go through the set up of your iPhone again from the beginning; entering your details, Wi-Fi password, and a few other things until you reach the page where you're asked how you want to 'Set Up iPhone'. There are three
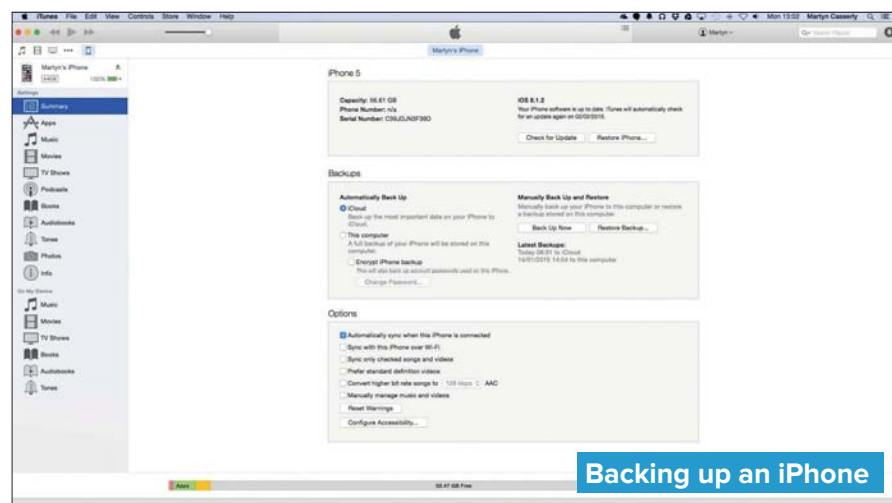
options – Set Up as a New iPhone, Restore from iCloud Backup, or Restore from iTunes backup. Select the iCloud option and you'll be prompted to enter your iCloud account details. Once you've done this, and agreed to the Terms and Conditions, your iPhone will begin restoring all of your data.

Obviously this could take a while if you have large backups or a slow internet connection, so don't attempt this is you're in a hurry. When the backup is completed your iPhone will reboot, and then it will start the larger job of downloading all of your apps.

Restoring an iPhone backups from iTunes

As with the iCloud instructions above, follow the steps up to the 'Set Up iPhone' screen, then select *Restore from iTunes*. You'll be prompted to Connect to iTunes, so plug in your iPhone and you'll see a screen on iTunes to gives you the option to restore a backup. Click *Continue* and your iPhone will be set up automatically, with the apps being restored from the iTunes backup. When it's finished, you'll have a freshly cleaned system and hopefully any problems that you were encountering before will now be a thing of the past.

What to do if your iPhone isn't backed up

Chances are that it is backed up but the backups were happening without your knowledge. To find out if you are backing

up to iCloud (you get a free 5GB of space) go to *Settings ➜ iCloud* and tap on *Storage*. Wait a few seconds for *Manage Storage* to show up and tap on that. Here you will see your various back ups for your iOS devices (there might even be one for an old iPhone that you could delete if you need more space.)

One of the back ups should say *This iPhone*, tap on that and you can see what is and isn't being backed up. You can basically turn things on and off so that they don't take up your full 5GB, or you can pay a few pounds per month for more storage.

You may think that some of those apps don't need to be backed up. After all, you will be able to download them again from the App Store as you already own them. But note that the data may include saved data for games, and other settings and preferences that you would prefer not to lose.

To check when your iPhone last backed up, go to *Settings ➜ iCloud ➜ Backup* and look at the date and time of the last back up. It will have happened the last time you plugged your iPhone in to charge and had Wi-Fi access available. It happens automatically.

If you find that you aren't backing up this way, we recommend that you go to *Settings ➜ iCloud ➜ Back up* and turn iCloud Backup *On* as this is the simplest way to back up and means that you can always recover the data on your phone no matter where you are, all you will need is a connection to the web.
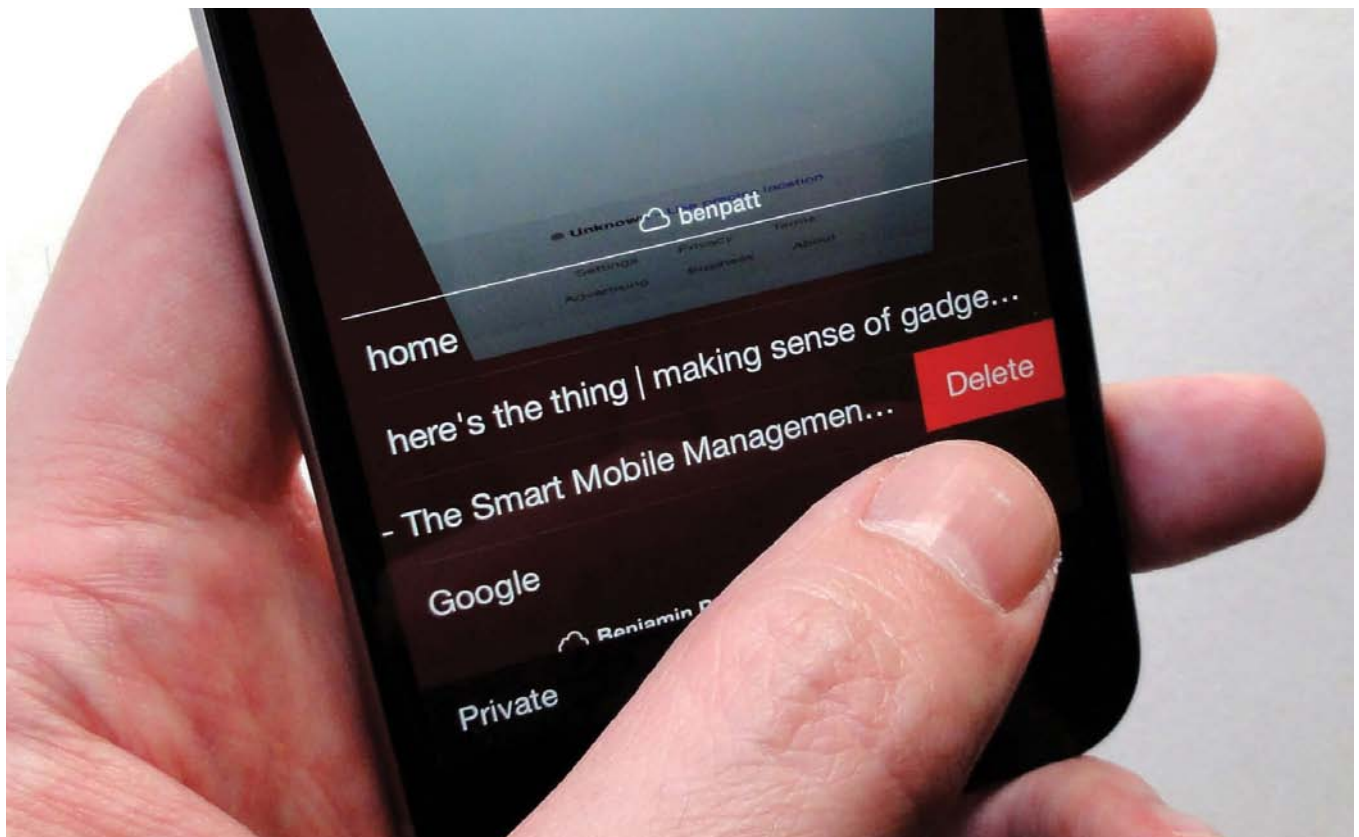
Time-saving Safari gestures for iOS

Ben Patterson's gestures will help save you time when using Safari on your iPhone or iPad

Safari is one of the most-used apps on an iPhone or iPad. But even if you are an experienced Safari surfer, it's possible you aren't aware of some of these time-saving gestures that can help you do things a little more easily or with fewer tabs.

Hold and drag to rearrange tabs

Swipe to close a tab

Safari in iOS 8 has an eye-popping view of all your open tabs. Just tap the Tabs button to see your tabs stacked in a scrollable 3D stack. To close a tab, you'll need to tap the tiny X in the upper-left corner of the tab you want to zap. Sure, it's doable, but it can be trickier than it sounds, especially if you're trying to use your iPhone with one hand. Instead, swipe the tab you want to close from right to left. When you do, it'll slide off the screen, closing itself in the process.

Hold and drag to rearrange tabs

You probably know that you can rearrange Safari tabs on an iPad – hold and drag a tab at the top of the screen, like you would in Safari on a Mac or PC. What you may not know, however, is that you can rearrange Safari tabs on your iPhone, too. Go back to the tabs view in Safari by tapping the tab button in the lower-right, tap and hold a tab, then drag it up or down. When you do, the other tabs will move out of the way, making room for the tab you're dragging.

Hold the Back button to see a tab's history

If you want to jump back two, three, five or 10 pages, there's a couple of long ways and one shortcut. The lengthy methods involve mashing the Back button repeatedly, or tapping the Bookmarks button, then tapping History.

Naturally, the shortcut is faster. Instead of tapping the Back button, tap and hold it to get a History list of the pages you visited recently in that current tab. (To see

Hold the Back button to see a tab's history
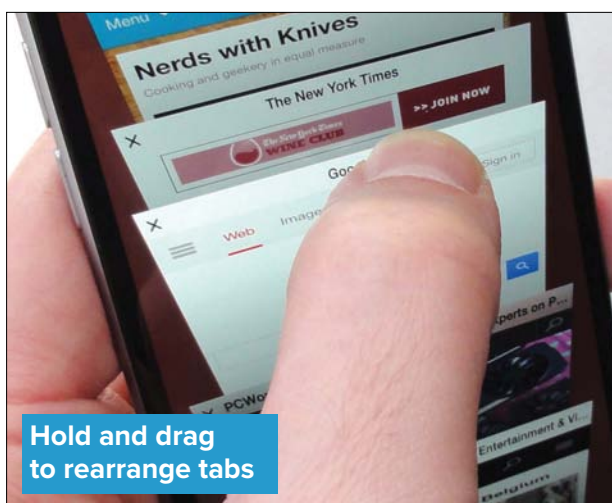
Swipe to for back (or forward) a page

your history across all tabs, you still have to go to the History list in the Bookmarks menu.) Tap a page in the menu to jump to it, of course. And yes, this trick works with the Forward button, too.

Swipe to go back (or forward) a page

Many of us use the Back and Forward buttons to skip through pages. There is, however, no need to use these. Instead, starting from just outside the edge of the screen, swipe from left to right to go back, just like swiping the pages of an iBook. To go forward, swipe from right to left.

Swipe to close a tab on another device

If all your Macs (running OS X Mountain Lion or later) and iPhones and iPads (running iOS 6 or later) are connected to your iPhone account, you can view all the open Safari tabs on any of those devices, thanks to iCloud Tabs.

On an iPhone, for example, you can tap the Tabs button, scroll down beneath the stack of open Safari tabs on that

Safari in iOS 8 has an eye–popping view of all your open tabs. Tap the Tabs button to see your tabs stacked in a scrollable 3D stack

iPhone, and voilà: you'll see the tabs you have open in Safari on your Mac, your iPad, and so on.

So far, so good, but now try this: swipe one of those open tabs from right to left. When you do, a Delete button will appear. Tap it to remotely close the open tab on the other device. It's not always instantaneous – we've seen it take up to a minute, so be a little patient.

Drag down to add a favourite
If tap the address bar at the top of the screen, a window with buttons for all your Favorite sites will appear. Usually you'd just tap one of those icons to jump

to that site, or type a search query or URL into the address bar itself.

But if you pull down on the Favorites window, you'll see two more options new in iOS 8: 'Add to Favorites', which adds the current page to that Favorites grid, and "Request Desktop Site," which will request the full desktop version of the current page, instead of its mobile-optimized 'skin'.

Swipe to close a tab on another device

Drag down to add a favourite
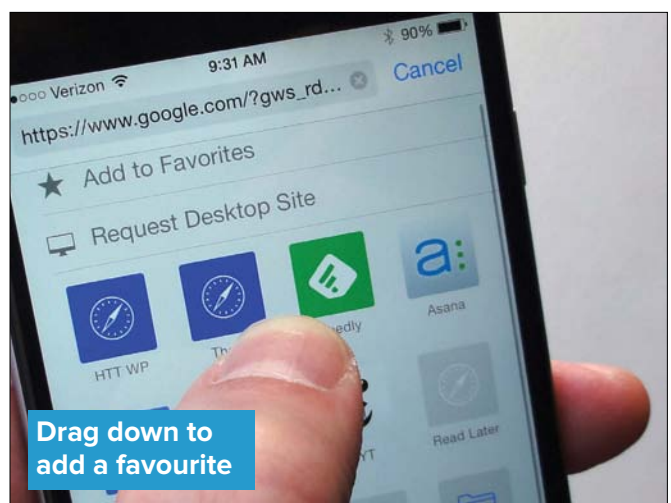
League of legends

iOS games that deliver a League of Legends–like experience. Andrew Hayward reports

There's no bigger genre in competitive gaming right now than MOBAs (or multiplayer online battle arena games), which pit small teams against each other to destroy the base at the other end of the map. Luckily, you don't need a gaming PC to enjoy a quality MOBA experience: a few key games are available on the App Store, designed specifically for the iPad and iPhone. And while they may be scaled down from the more elaborate desktop entries in certain ways, you can still find exciting, strategic combat wherever you are.

Wondering where to start? Here's a quick tour of the top MOBAs available

today for iOS – they're all free-to-play, so you might as well dabble.

Vainglory

Released in November for both iPad and iPhone, Vainglory (free; iPhone and iPad) is our top pick of the bunch, as evidenced by its place on our lists of the best iOS games of 2014 and our favourite free games of last year. And it's certainly the most attractive of the bunch, with excellent texture work and effects making it a showcase game worthy of its own iPhone commercial.

But this mobile original is luckily much more than just a pretty face, as the three-on-three team battles offer plenty of

excitement on the battlefield. Vainglory is a bit streamlined compared to some MOBAs, however: there's just one key battle lane on the single current map, where you'll team up to fight your way through automated turrets and ultimately destroy the crystal found in the rival base.

Below the lane are strategic opportunities to power-up your autonomous fighting minions or generate extra gold, but a lot of the actual combat takes place on the one path. Much as we'd like to see some additional variety pumped in, the characters are nicely designed and differentiated, and Vainglory really looks and plays like the real deal, albeit on a tablet or phone.

Fates Forever

Fates Forever (free) is our next best choice for an iOS MOBA, but it's a very close second, and this iPad-only affair differs from Vainglory in some key ways. Notably, the game map takes a dual-lane approach to combat, with high and low paths lined with turrets and tributes (minions), with the strategic conquest elements found in the wooded area in between. And it also offers a voice chat feature via headset, if you want to team up with friends and really work out your movements and actions.

But the most noticeable difference is visual. While Vainglory has a more serious-looking, steampunk-tinged approach, Fates Forever is pure fantasy, with lush green environments filled with all manner of unique, colourful creatures. .

The addition of a second lane shakes things up, but otherwise, matches in Fates Forever have a familiar tenor: you defeat enemies and their turrets, level up your abilities along the way, and use accumulated coins to purchase gear and items. It just has a different flavour here, and if you're playing on iPad and want to chat in real-time with pals while playing, Fates Forever has an advantage.

Heroes of Order & Chaos

At just over two years old, Heroes of Order & Chaos (free) is the godfather of iOS MOBAs – and it's entry is still going strong with a devoted fan base today. Unlike the other games on this list, this formative touch MOBA offers the option of five-on-five team play) in addition to the usual three-on-three design.

Similarly, it's the only game on the list to offer more than one map – it actually has three, two of which are for the larger team battles. And what really stands out about them is just how absurdly massive they are. That said, the added sense of scale can be nice, and a hard-fought five-player victory should be even sweeter. And you can even share it with the world, thanks to live gameplay streaming via Twitch.

Otherwise, Heroes of Order & Chaos is a solid genre entry that is showing its age compared to newer rivals. The Warcraft-esque fantasy setting is generic and jagged-looking, and the controls are a bit awkward, with the mix of tap and virtual joystick control schemes resulting in some wonky camera moments. But if you like the bigger battles in a MOBA, it's worth a shot.

Solstice Arena

Zynga's Solstice Arena (free) was one of the first mobile MOBA games, and compared to the other games on this list that present scaled-back takes on the familiar PC approach, the game feels like its own super-streamlined beast.

Truly, rapid play is the key here and games typically last between five and 10 minutes, or less than half what you might find in other iOS MOBAs. The map design is incredibly straightforward, with two bases and a small chunk of land in between, and all of the turrets are located within each base. There are no automated allies beyond your three-man team, which means no 'living shields' to soak up turret attacks when you storm the enemy stronghold.

The auto-purchase feature is helpful for managing your coins and snagging new equipment without digging through menus, but the characters otherwise don't level up during battle. Solstice Arena deserves credit for showing how the MOBA template could work on touch devices, but unless your primary interest in the genre is finding quick competition, it's been surpassed by much better options.
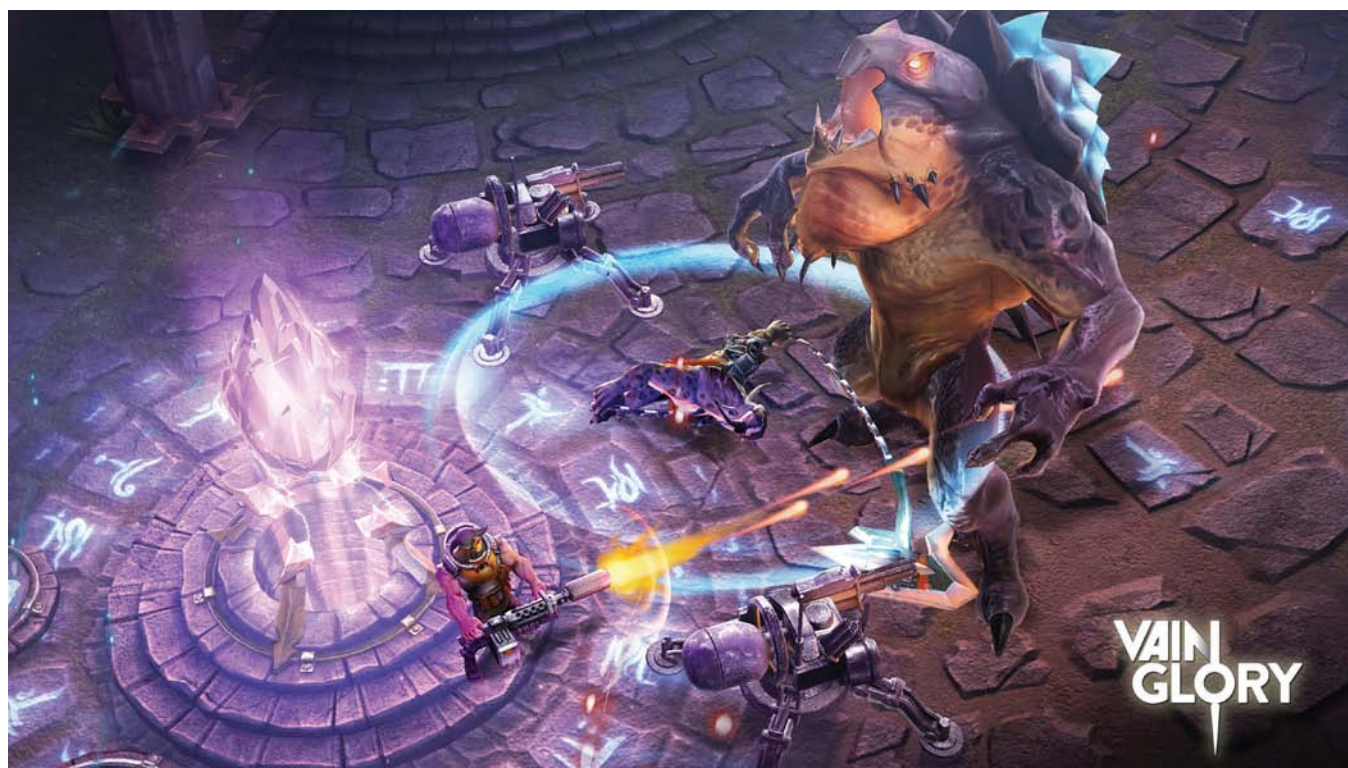
Best third-party email apps for iOS

Derek Walter reveals the powerful features found in third-party email apps for iOS

Apple's stock mail app was given some nice upgrades in iOS 8, but it still lacks many of the more powerful features found in other third-party email apps.

With so many different choices out there, you may be wondering what the best alternative is for your needs, so we tried out a handful of the most innovative email apps that want to be your inbox managing assistant. Each one takes different approaches to email. Some, for example, help you categorise the jumble of messages to mine the gems, while others ruthlessly cut through the clutter to achieve a pristine and empty inbox.

I tried out all of these apps on an iPad mini, however, all of these options are universal apps with iPhone 6 and 6 Plus support either in place or pledged to come.

For apps that supported it, I connected a Gmail, iCloud, Microsoft Exchange and Outlook account to see how they handled each of the dominant email platforms. I also wanted to discover what they brought to the table in terms of unique features, interface design, and their overall philosophy to managing email.

Best overall: CloudMagic
CloudMagic (free) stands on top of the pyramid for its minimalist design, integration with other cloud storage services, and how well it pushes email from almost any type of account. It supports Gmail, Yahoo Mail, Outlook, iCloud, Microsoft Exchange, Office 365, AOL and IMAP.

CloudMagic's strength is its smart cards, which can save a message into a preferred productivity tool: Evernote,

Todoist, Pocket, Trello, OneNote, Zendesk, Salesforce, Asiana, and MailChimp are all supported.

CloudMagic also has a pretty clever edit mode that queues up several messages for editing with one action. You can swipe on messages to archive, delete, or attach a follow-up reminder for CloudMagic to bug you about it later.

In addition, you can link CloudMagic to a cloud storage account for attaching files to outgoing messages – it works with Google Drive, iCloud, Dropbox, and OneDrive. And it has been optimised for iOS 8 and the iPhone 6 and 6 Plus.

Best for 'Inbox Zero': Mailbox
If you love the satisfaction of an empty inbox, then Mailbox (free) could be your cup of tea. Its whole premise is to help you reach the elusive 'Inbox Zero' by

swiping away your messages, with each of its gestures attached to a specific action. Not only do the swipes archive and delete messages, but they'll 'snooze' an email, which then schedules it to reappear in your mailbox after a specified amount of time. It's good for those messages that you aren't ready to archive but don't need to keep in you inbox, mocking you with their unfinished status.

Unfortunately, Dropbox only works with Gmail and iCloud. Support for other platforms is coming, though no specifics have been offered by its developers.

If you like the Mailbox philosophy, then get the Mac desktop app (it's still in beta) for the most fluid email experience. It's also optimised for the iPhone 6 and 6 Plus.

Most social: Tipbit

Keeping tabs on your contacts' social networks is a vital part of staying connected. Tipbit (free) does a great job at this by pulling in your contacts' Twitter, Facebook and LinkedIn info That way, if you get an email from someone and want to see what they've been tweeting, or need a reminder of their job title, you can just tap on their name and view his or her contact card.

Tipbit also tries to connect a contact with what it thinks is their Twitter account if they don't have one listed in their signature, but that doesn't always work out – the app showed tweets from Anderson Cooper's Twitter account for one of my contacts named David Cooper.

Tipbit supports email from Gmail, Microsoft Exchange, IMAP, iCloud, Outlook, and IMAP. It is optimised for the iPhone 6 and 6 Plus.

Best customisation: Boxer

Boxer (free) has also jumped on the swipe-on-messages bandwagon, though with many different customisation opportunities for these actions. It takes a bit of work to set this up, but if you want to work a very particular way and use muscle memory for certain tasks, then you'll like what Boxer has to offer.

It integrates well with features found in other desktop email apps, such as Gmail's labels and sharing files through your

Dropbox or Box account. Boxer supports Gmail (it also syncs your labels – a plus for Gmail power users), Yahoo, iCloud, AOL, and Outlook. Microsoft Exchange support only works with the premium version of Boxer, which is £3.99. It's optimised for the iPhone 6 and 6 Plus.

Best for power users: Accompli

Accompli (free) is the best app of the bunch for power users who get a ton of email and despise constantly moving back and forth to different apps to reference calendar appointments or files.

Accompli's design isn't as polished compared to some of the others, but it compensates with excellent functionality – it includes your Google Drive, Dropbox, Box, or OneDrive contents and calendar events right inside the app.

If you're the business type with multiple meetings and events going on, then Accompli should possibly be on the top of your list. It supports Microsoft Exchange, Gmail, Yahoo, iCloud, and any IMAP account; it is optimised for the iPhone 6 and 6 Plus as well.

Best for Exchange users: Mail+ for Outlook

Mail+ for Outlook (£4.49) follows the Exchange philosophy of putting all of your core needs right into one application: email, contacts, calendar, and – unique among this app list – Outlook's tasks. It connects to any Microsoft Exchange and Outlook account.

It also does a better job than others at handling the formatting found in Outlook messages – like when you get a message from a work colleague who uses five different colours in their email to highlight different information. Now you can see it on your iPhone or iPad.

While other apps on this list handle Exchange, I'd put this as the top choice if your core productivity takes place with Microsoft's platform. It's also optimised for the iPhone 6 and 6 Plus.

All in with Google? Go with Gmail

As someone who has also used Android, I can say with certainty the Gmail app for iOS isn't as fast or robust as its Android

counterpart. However, if you are a power user and rely on labels, Google's search prowess, and its design, then go with the Gmail app (free). It works with consumer Gmail and Google Apps for Work.

It supports up to five accounts, so you can check up on your personal and work email. It's updated for the iPhone 6 and 6 Plus, so you don't have to contend with an ugly and stretched out interface.

It's a little slower than what I would like, but it works and functions like Gmail, making it easier to transition from the desktop to mobile when powering through subscription offers or coupons.

If you're a Gmail user who loves the Inbox Zero philosophy, than you should give Gmail's Inbox (free) a shot, too, if you can score an invite.

Best for categorizing clutter: Inky Mail

An email account can quickly fill with a mashup of coupons, travel deals, and shipping notices, so Inky Mail (free) works to filter these out – that way, you're not rummaging through this deluge while looking for that hotel reservation. The app's home screen has 15 different categories for actions and messages, including a unified inbox, personal messages, social, packages, maps, contacts, and subscriptions.

The Filtered Inbox is the most powerful tool for focusing on essential correspondence, as it strips out all the excessive newsletters and weekend sale notices. Once there you can swipe to the right to get back to the app's home screen

The different inboxes have other helpful tools for cleaning things out and offer quick access to your email list's 'unsubscribe' links. It also offers a helpful Today widget, which you can customise to show messages from one of your specific filters or the unified inbox.

Inky Mail is targeted more at consumer accounts, especially if you'd rather keep messages hanging around to avoid missing a great deal. it works with Gmail, iCloud, Outlook, AOL, Yahoo, IMAP, and POP accounts; Microsoft Exchange support is forthcoming.
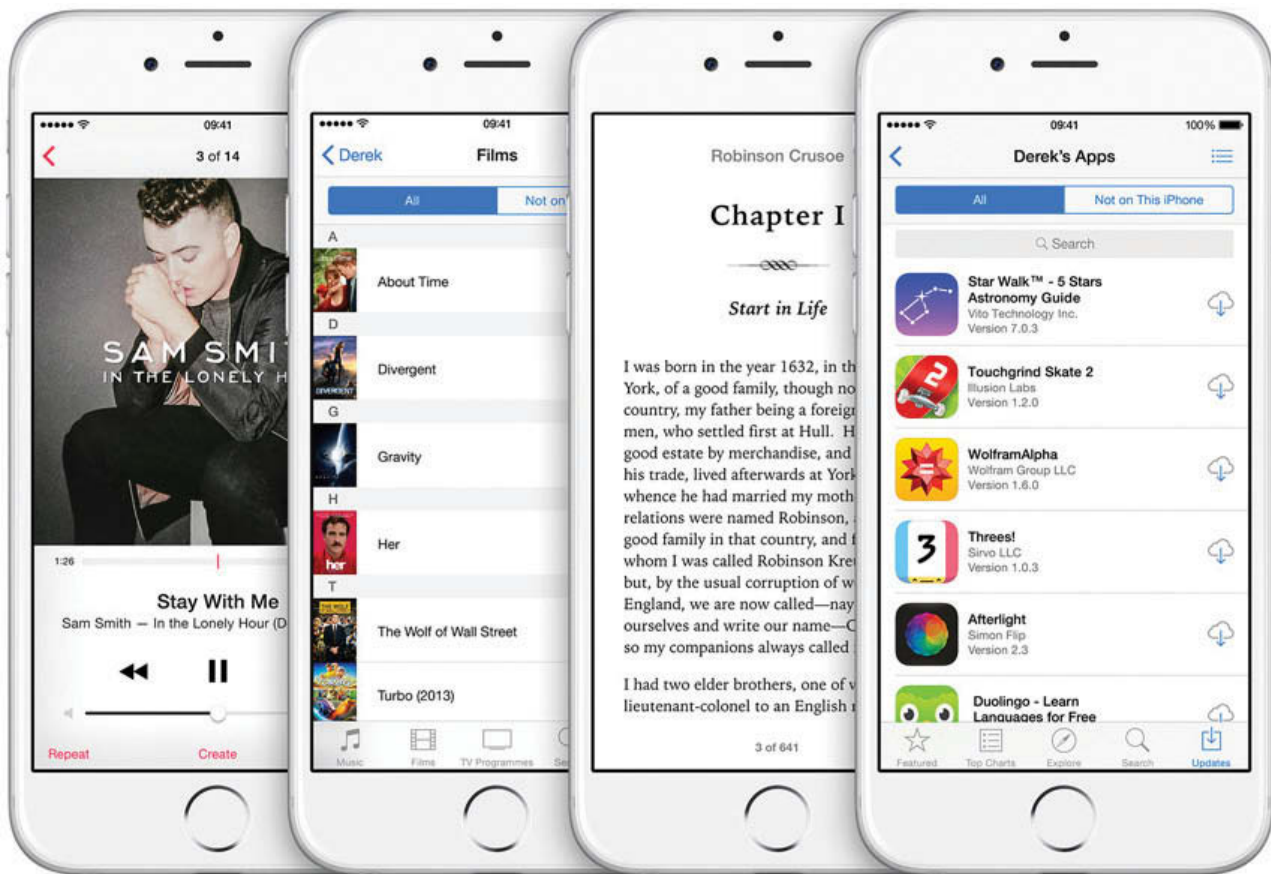
The risks of Family Sharing

Glenn Fleishman explains why Family Sharing may not be for everyone

No Mac is an island, and every iPad is part of the main. But Apple has, for many years, had trouble with letting a group of allied people – let's call them a 'family' a – make best use of shared devices and shared digital purchases. Family Sharing is the latest attempt by Apple to facilitate families' sharing (if not caring).

It comes with a hidden curse, though: families that share together can have all their devices wiped together and all track each other's locations, regardless of one's age. One could argue that these are good things when you've chosen to

opt into Family Sharing and location sharing. But, as your faithful writer keeps stressing, you have to know the risks in order to evaluate them.

Family planning

Family Sharing requires all the latest operating systems and software: iOS 8, OS X Yosemite, and iTunes 12. On a Windows system, you'll need to install iCloud for Windows 4. With all of that in place, Apple lets up to six people share media purchases across their own accounts. This includes apps (and in-app purchases), books and anything bought

via iTunes. A single credit card can (must, actually) be used to make purchases.

In this feature, I'll address something a reader alerted us to via Twitter: Family Sharing extends to Find My iPhone and Find My Mac, as well as Find My Friends.

This all makes perfect and lovely sense. When my children are old enough that I want to send them into the world on their own, I expect to outfit them with iPhones, and absolutely want to be able to know where they are if something happens or just to know they've gotten home safely without me having to have them check in.

But there's something a little interesting in how Family Sharing works. Even though you can denote specific accounts as belonging to the 12-and-under age group, you can't prevent location sharing and other features

It's a perfectly reasonable thing for an adult to not want to be tracked by other people at all times, even when they trust them with their lives

Disable Share My Location
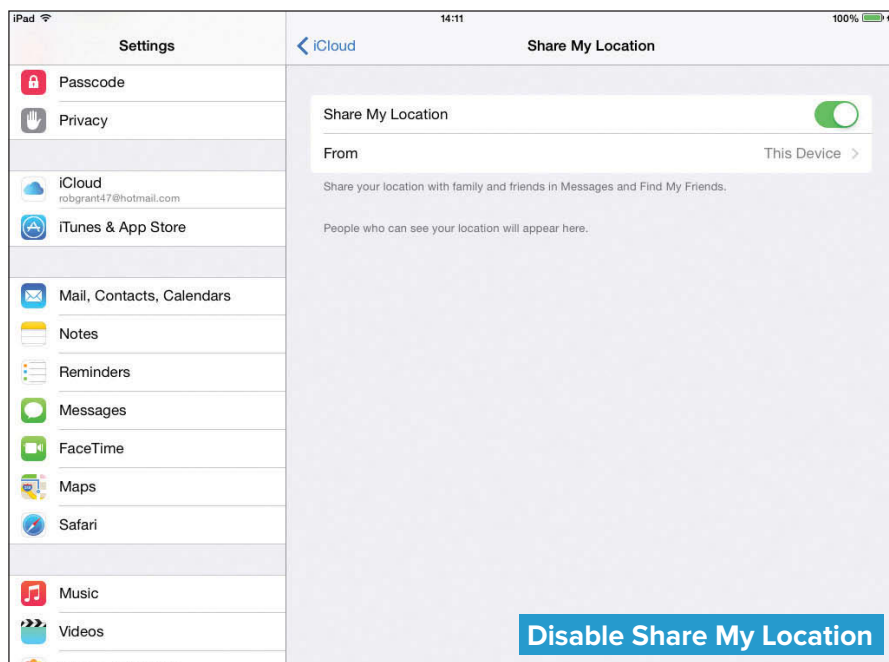
from working across every device in a group, as opposed to just adults seeing everything, and children not unless the adults allow it. Even if Apple offered this option for younger kids, teens graduate from account restrictions at age 13.

That sounds trivial, and I don't have teenagers yet, but it would seem to defeat the purpose of keeping tabs on your kids as appropriate while also not letting them know when you're, say, returning from an evening obligation, and give them time to kick their friends out and spray air freshener all over.

Adults could, of course, suppress their location by disabling Share My Location in *Settings ➜ iCloud*, but then everyone in a group, including the other adult or adults, can't find them either. Let's not get coy about affairs and secret gambling habits and the like. It's a perfectly reasonable thing for an adult in a pair or other relationship to not want to be tracked by other people at all times, even when they trust them with their lives. And if your 'family' is a group of people sharing a home and media, rather than a more conventionally structurally define one, it becomes even more of a touchy topic. The awareness of everyone's whereabouts in a group and the choice for someone to opt to be desired options.

Wipe that smirk off your phone

The related issue is that Find My iPhone and Find My Mac become available to everyone in a family. Every device you possess and every device that anyone in your communal group has logged in to a participating iCloud account is part of this collection.

This is great when a device is lost or stolen. Rather than that person having to get to a browser or iOS device to log in and track their device, anyone else in the family can pull up the information. This is handy while travelling together. If you disable location sharing, Find My iPhone continues to work for your account, and

still provides limited access to the rest of your family group. Another family member can determine whether a device has an internet connection, and can play a sound to help you or someone else find it.

There is, however, a potential downside: with location sharing enabled, every family member has the power to wipe every other device, iOS and Mac, that's part of the family group. Apple recognised that not all families are happy ones, and that hardware might fall into the wrong hands. Thus, to erase a device belonging to another member of group, that member's Apple ID password is required.

So even in the event that one person has a device stolen or someone gains access to it and they have a password that can be guessed or is written down, that still only allows that malefactor to wipe the iOS and Mac devices belonging to that one account holder.

But this should alert you to the risk once again of writing down and sharing passwords. In a home with one or more shared computers, a sticky note on a monitor with the family's passwords has never been such a bad idea.

The advantages of Family Sharing for the right set of people aligned in a group are fairly large. But Apple should consider offering more fine-grained controls than the coarse option of turning location on and off for the family group, offering better mapping to how families of all sorts actually work.

Share photos

Privacy settings in iOS 8

Lou Hattersley reveals how Apple's privacy settings can help boost your device's security

iOS 8 is full of security settings that have been designed to keep your data secure. Even so, privacy-conscious users should adjust iOS settings to get the best privacy security.

Here we show you which settings you should change to ensure your personal information stays private.

Why Apple protects your privacy better than its rivals

First off, iOS 8 users will be pleased to know their data is safer than that of some other platform users. "Apple doesn't scan your communications, and we wouldn't be able to comply with a wiretap order even if we wanted to," a company spokesperson told us.

Back in September 2014, the tech giant updated its privacy policy, while CEO Tim Cook released a letter that slammed other tech companies, including Facebook and Google. "Our business model is very straightforward: We sell great products," the letter reads. "We don't build a profile based on your email content or web browsing habits to sell to advertisers. We don't monetize the information you store on your iPhone or in iCloud. And we don't read your email or your messages to get information to market to you. Our software and services are designed to make our devices better. Plain and simple."

Macworld UK's David Price argues that Apple is better for privacy than other companies because of the underlying DNA of the company. "Apple makes great products and sells them for quite a lot of money; Google makes great products and gives them away for free, then sells its users' data for quite a lot of money," he says. "Apple is one of the few companies left operating a business model that allows it to respect user privacy without damaging its bottom line. If anything, Apple's revenues are dependent on happy users. On loyal users."

And Microsoft doesn't seem much better than Google to us: it operates the same sort of business model as Google, with Bing and the Microsoft Media Network promising "a range of targeting options including profile targeting,

behavioural targeting and remessaging". Even Microsoft's own ex-privacy advisor Casper Bowden doesn't run Microsoft software. "I don't trust Microsoft now," said Bowden.

Three things you need to know about Apple and privacy
1. iMessages and FaceTime
iMessages and FaceTime are encrypted by iOS 8 on your iPhone, iPad or iPod touch in such a way that they can't be accessed without your passcode. Apple states that it has "no way to decrypt iMessage and FaceTime data when it's in transit between devices".
2. iCloud data
Unlike Google, Apple does not scan your iCloud data for advertising purposes.
3. Data is not shared
Apple does not share your data with third-party companies. If it stores your data on a third-party server, it retains the encryption keys in its own data centres. So data stored locally on your phone cannot be accessed by Apple, even if the FBI issues a wiretap order. This isn't the case with Google and other companies, which make their money from monitoring your personal information and then delivering adverts based on that data.

What data does Apple encrypt in iCloud?
According to Apple, the following data is encrypted in iCloud. This means that Apple holds the encryption keys and your data is secure:
• Encrypted iCloud data
• Photos
• Documents in the Cloud
• Calendars
• Contacts
• iCloud Keychain
• Backup
• Bookmarks
• Reminders
• Find My iPhone
• Find My Friends
• Mail and Notes (encrypted in transit)
    These things are safe as long as your password remains unknown by other people. This is the rub, though: what if somebody else knows (or guesses) your
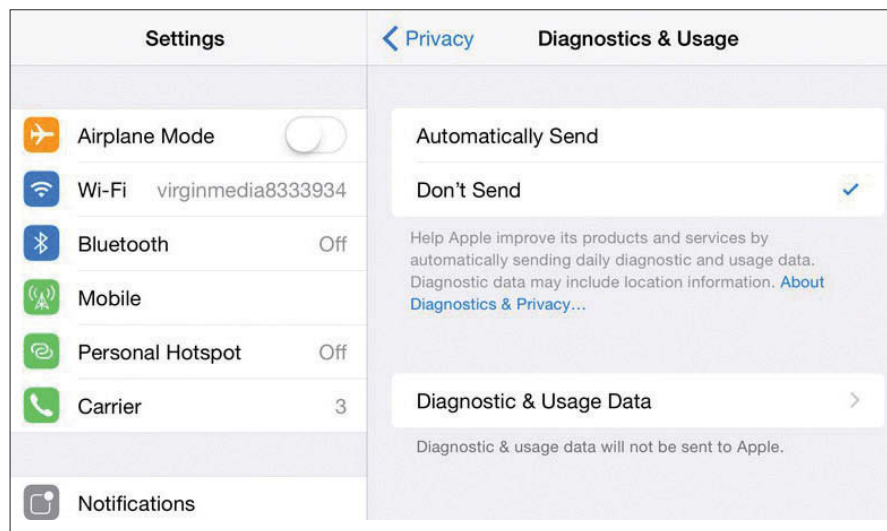
Apple ID and Password? This is why it is important to pick complex passwords, and keep them private.

How to keep your iCloud and personal data secure
Much has been made of Apple's iCloud hack, especially with regards to celebrities having their private photos accessed and shared online. In regards to this, it's thought that the hackers simply guessed the passwords, most likely by accessing the security questions and using public information to guess them. (These are things such as where they are born and the name of their first school: not too hard to guess for a public figure whose entire life story is available online.)
    Apple is reviewing its policy in this area, but you might want to ensure that your security information is hard to guess (or find out) and that you also have two-step verification turned on. Two-step verification ensures that even if your password is guessed, Apple will contact you on a device it knows you own before allowing access to your data.

Three tips for beefing up your security
1. Turn on a Passcode on your iPhone
Tap on *Settings → Passcode* (or Touch ID and Passcode) → *Turn Passcode On*.
2. Pick a strong iCloud password
Visit tinyurl.com/nh2mk6s in Safari and update your security settings.

3. Enable two-step verification
First, go to My Apple ID, choose *Manage your Apple ID* and sign in. Click on *Password* and *Security*. Next, under Two-Step Verification, select *Get Started* and follow the onscreen instructions.

Six privacy settings you should change in iOS 8
1. Turn off Diagnostics and Usage Data
Tap *Settings → Privacy → Diagnostics and Usage* and tap *Don't Send*.
2. Turn off Geo-Location for Photos
Tap Settings → Privacy → Location Services → Camera and *Never*.
3. Location based Ads
Tap *Settings → Privacy → Location Services → System Services* and set Location-Based iAds to *Off*.
4. Limit Ad Tracking
Tap *Settings → Privacy → Advertising* and set Limit Ad Tracking to *On*. While you are here tap the *Reset Advertising Identifier*, so you are using a new ID number that advertisers cannot track.
5. Turn on Do Not Track
Do Not Track is a Safari option that prevents reputable websites from tracking your information. Tap *Settings → Safari* and set Do Not Track to *On*.
6. Use DuckDuckGo instead of Google
Go to *Settings → Safari → Search Engine* and tap on DuckDuckGo. This web search engine is designed not to track, or share, your personal information.
    Tap all of these options and your iOS device will be more secure than ever.
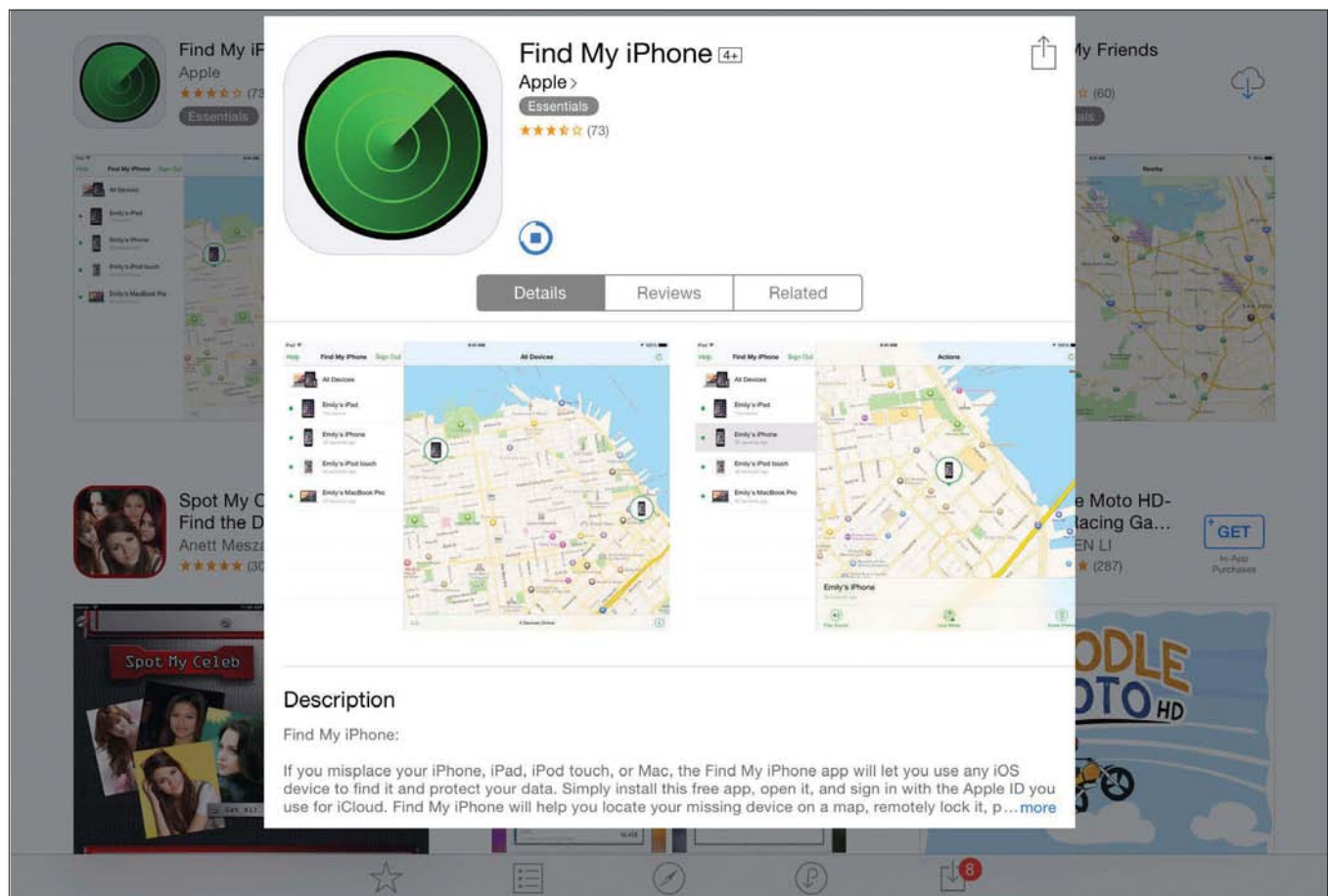
Find my iPhone in iOS 8

Martin Casserly explains how to track down a lost- or stolen iPhone

t's a gut-churning moment when you reach for your iPhone or iPad only to discover that it's gone. Did you leave it at work, on the bus, or has someone deftly removed it from your pocket?

Thankfully all modern iOS devices come equipped with the Find my iPhone feature, which allows you to track the handset to its current location. It also has the facility to make the device play a sound so you can find it, or even remotely wipe all data if you fear the handset has been stolen. In fact a recent report by the American Federal Communications Commission found that nearly 50 percent of robberies in London involved a smartphone, but thanks to features such as Find my iPhone, mobile handset theft had been reduced by nearly 24 percent.

The Find my iPhone service is free, easy to set up, and could be the most valuable app on your iPhone. It also works on your iPad and Mac, so you can keep track of all your Apple devices.

Turn on Find my iPhone

Like many of the advanced features in iOS 8 Find my iPhone uses iCloud to store and sync data, so you'll need an iCloud account to use the service. The chances are you already have one, as Apple prompts you to create one when you first setup your iPhone or iPad. To check go to *Settings ➜ iCloud* and you should see your account name listed. If not just follow the instructions and set up an account. You just need to remember that Find my iPhone uses your Apple ID to associate devices with

your account, so you'll need to use the same one on all of them.

Turning on Find my iPhone itself is very simple. In Settings, choose *iCloud ➜ Find my iPhone* and then slide the virtual switch to the right until it goes green. This means that the feature is now active. Underneath the Find my iPhone setting you'll also see another option entitled Send Last Location. This is a new addition for iOS 8 and means that your iPhone will send location data to Apple just before it runs out of battery. Normally when an iPhone is turned off, or has a lack of power, the Find my iPhone feature can't work as there is no signal being sent from the device. This could be heartbreaking if you've left your phone somewhere and the battery drains before you realise it's gone. With Send Last Location, you will at

least know where it was when the power finally ran out. Slide the switch across to enable this essential feature.

One last thing to check is that Location Services have been enabled, as this allows your devices to be tracked by the Find my iPhone app. Go to *Settings ➜ Privacy ➜ Locations Services* to make sure.

Download the Find my iPhone app

Alongside the settings on your iPhone there is also an accompanying free app. Look in the App store for Find my iPhone, then download it to your device. The app is useful as it automatically shows you the locations of any devices using your Apple ID, so long as they have Find my iPhone activated. Once the app is installed launch it and you'll be prompted to sign in with your Apple ID, then you'll be shown a map, with your devices listed on the left. This is particularly useful if you've lost your iPhone, as it means you can use your iPad to find it.

Using the app

When you've selected the device you have a few choices open to you. At the bottom of the screen, you'll see an icon for a car, this will take you to Maps and plot a route directly to your iPhone. Tapping on Actions instead will bring up three other options.

The first is Play Sound, which will do exactly that. This is most useful if you've lost your handset somewhere around the house, or are having trouble tracking it down when you reach the listed location. Tapping the icon will cause your iPhone to beep loudly, making it easier to find.

Lost Mode enables you to enter a passcode to remotely lock the device. This prevents anyone who finds your iPhone from gaining access to your data. You can unlock it using the same code when you finally recover the device.

The final choice is Erase Phone, which as the name suggests is something of a nuclear option. Tapping this will wipe all data from the device and should only really be used if you think it's been stolen, or has particularly sensitive information stored onboard. As this deletes all

Locating a device via iCloud
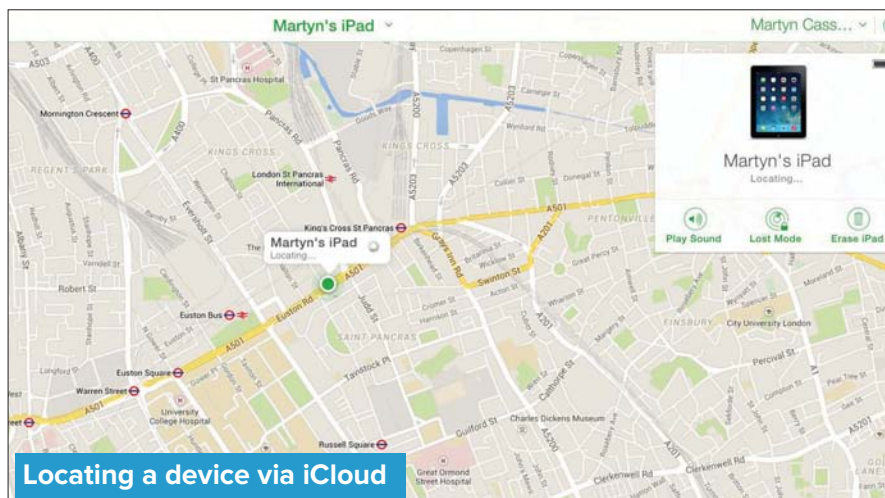
information, including your Apple ID, once you press that button the device will disappear from your Find my iPhone list.

Using Find my iPhone via the iCloud website.

If you don't have another Apple device, that doesn't mean you can't track your iPhone down. The iCloud website gives you access to Find my iPhone, alongside various other features such as the iWork apps, Mail, Calendar, and the new iCloud Drive. To use it, simply log in with your Apple ID, launch the Find my iPhone app and you'll see a map with the location of your device displayed. Click on the green dot and when the device name is shown,

click the information icon on the right. Now you'll have the same three options – Play Sound, Lost Mode, and Erase iPhone or iPad – as you would on the Find my iPhone app.

Using Find my iPhone with Family Sharing

Another addition for iOS 8 is the ability to find other family members' devices using Family Sharing. To enable this service, you need to have Family Sharing set up on your device and for all the other members of your family group to have Find my iPhone switched on. Now, if someone loses their iPhone, the whole family can help track it down.

Using the app
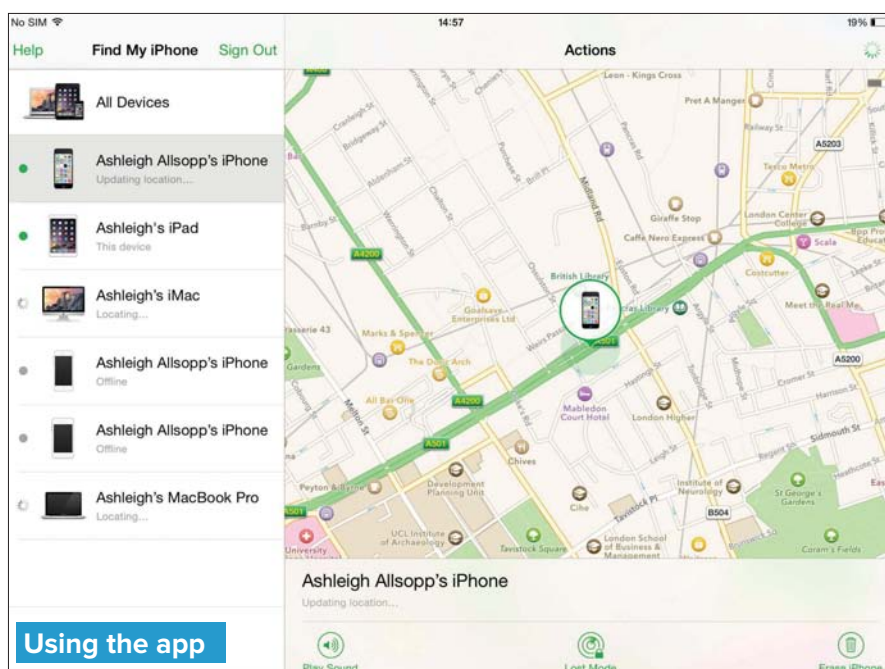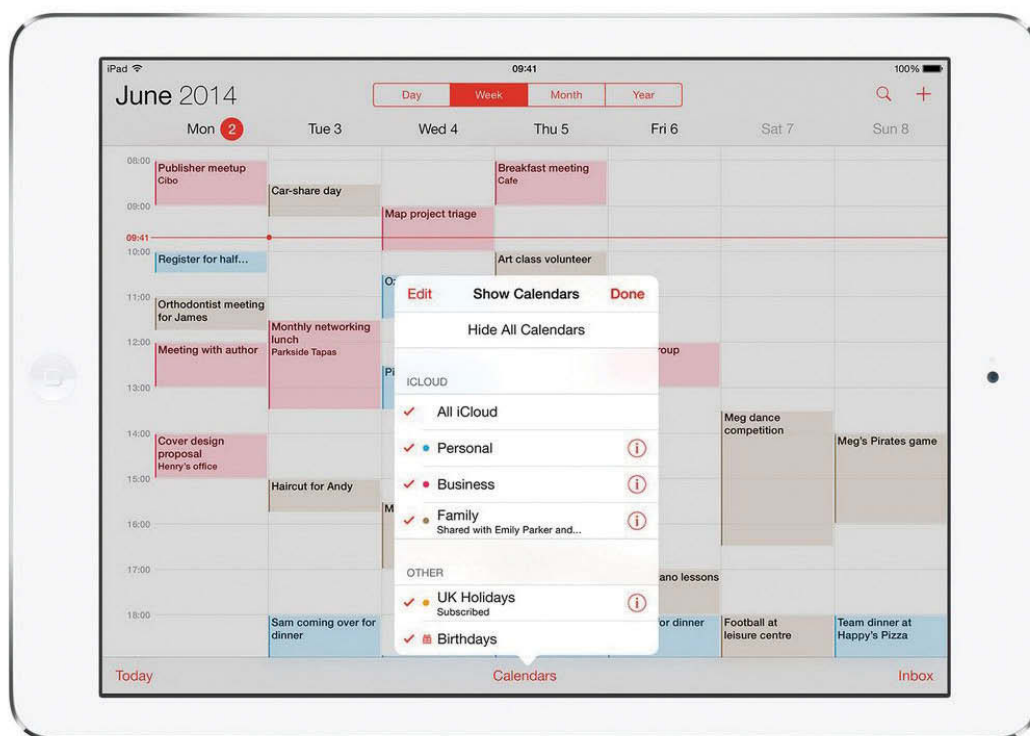
Calendar's best new features

Martin Casserly shows off some of the useful new features in the latest version of Calendar

For many iPhone and iPad owners, the built-in suite of Apple apps are some of the most useful ones found on their devices. Whether it's managing communications in Mail, browsing the internet with Safari or organising hectic lives with Calendar, these are the ones that get used everyday. Now, with iOS 8, Apple has added some helpful features to Calendar, ones that could make juggling a busy schedule that little bit easier.

Set up Calendar for iOS 8
To use Calendar you'll first need to set up an iCloud account, as the app utilises the Apple service to sync data between your various devices. It's likely that you already have iCloud configured, as when you first turned on your iPhone or iPad you would have been asked to setup the feature.

You can easily check this by going to *Settings ➜ iCloud* and look to see if your name is there. One thing you might need to do is scroll down the list below and find

Calendars. Make sure that the switch to the right of it is slid across and green. When all this is done press the Home button and launch the Calendar app.

View events in Calendar for iOS 8
The main screen in Calendar is slightly different, depending on which device you're using. On an iPhone, for example, you have the Month view, which shows the numerical dates, marking any that have appointments by placing a dot underneath them.

Tapping on a date brings up the Day mode, showing your timeline. If you tap on the icon at the top of the screen marked with three horizontal lines, you'll see the List mode which displays all of your upcoming appointments for the

next few days. Finally, you can view the Week mode by turning your iPhone to the landscape position.

On an iPad, the layout has been redesigned in iOS 8 to feature a Day mode that also displays an Inspector panel. Here details of any highlighted appointment can be seen and edited quickly. Across the top of the screen are also buttons for Day, Week, Month, Year, which take you to the respective screen.

Share a Calendar with the new Family Sharing feature
One of the best new features in iOS 8 is Family Sharing (see the image above). Whereas previously purchases and data were the sole preserve of your Apple account, now you can let six family

With iOS 8, Apple has added some helpful features to Calendar, ones that could make juggling a busy schedule that little bit easier

View events

doesn't always mean you'll get somewhere on time. Things could change for iPhone users, though, thanks to the new Travel Time feature.

When you're adding an appointment into Calendar, once you enter the address you'll see an option for Travel Time. Ensure that this is turned on and that you also enter a Starting Location. Then your iPhone will automatically warn you when it's time to leave.

Use Auto-complete for regular appointments

Another useful feature announced for iOS 8 is that as you enter appointments into Calendar the app will remember any regular events and begin to offer auto-completion suggestions. It's a small thing, but over time this could become incredibly useful if you often repeat similar tasks.

Use Microsoft Exchange server to see if people are free for meetings

If you use Microsoft Exchange server in iOS 8, you can now see if other Exchange users have space in their diary when you send invites. Calendar will let you know if the intended time is already booked and if so suggest alternatives. A simple but useful feature for those who use iPhones and iPads in the business world.

Travel Time
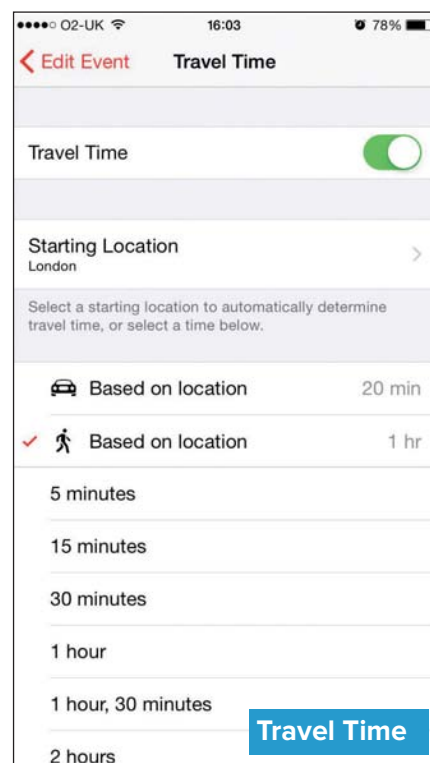
Access alternative calendars

In the past, the only calendar available to iOS users was the traditional Gregorian version that the majority of the Western world uses. Of course, that doesn't mean everyone favours that flavour, so Apple has added other options. These can be found in *Settings ➔ Mail, Contacts, Calendars ➔ Alternative Calendars*.

members or close friends have access to specific areas via Family Sharing.

The main headline grabbing aspect of this option was, of course, the iTunes library, but one that snuck under the radar was that it's now possible to have a shared calendar. Obviously for this to work Family Sharing needs to enabled. To do so you'll need to visit *Settings ➔ iCloud*, then select the Setup Family Sharing option and follow the instructions.

With this completed head back to Calendar. Add a new event, or edit an existing one, then tap on the Calendar section and you'll find the option for Family in the list. Select this, finish editing your appointment, and once you tap *Done* the event will be shared with anyone else on your Family calendar. Other members can also enter their own appointments, all of which will appear on your device. These sort of functions have been available with Google calendar in the past, but now you can have the full Apple experience even in Calendar.

Use Travel Time to never miss an appointment

It's all well and good having a list of meetings in your phone, but that

Alternative calendars

Complete guide to using emoji

Emoji are fun ways to add colour and emotion to your emails and iMessages. Matt Egan explains

Emoji are the ideograms – smileys – used in electronic messages and on websites. You may know them more generally as 'emoticons', but emoji are a specific subset of that phenomena. Emoji are widely used in Japanese culture, but their use has spread around the world, and on to many devices.

'Emoji' is itself an Anglicised version of the Japanese words for 'picture' and

'character', which is pretty self explanatory. Emoji are incorporated into Unicode, and are now available on many Android devices, within Google's Gmail and – yes – on your Apple device. You just have to find them to unlock the fun.

Emoji vs emoticons
The essential difference between emoji and emoticons is that 'emoticon' is a general term for smiley faces used in

text messages. When you use :-) and it resolves to a face graphic, that is an emoticon. Emoji are graphics you insert from a special keyboard, whilst composing messages.

There are many more emoji than there are emoticons, and they are standardised images built into mobile devices such as iPhones and iPads. You may also find that some emoji have a particularly Japanese flavour. Japanese foods, animals and characters feature widely. And some images just don't translate.

Apple and emoji
Emoji first appeared on Macs as far back as OS X 10.7 Lion. iOS, of course,

There are many more emoji than there are emoticons, and they are standardised images built into mobile devices such as iPhones and iPads
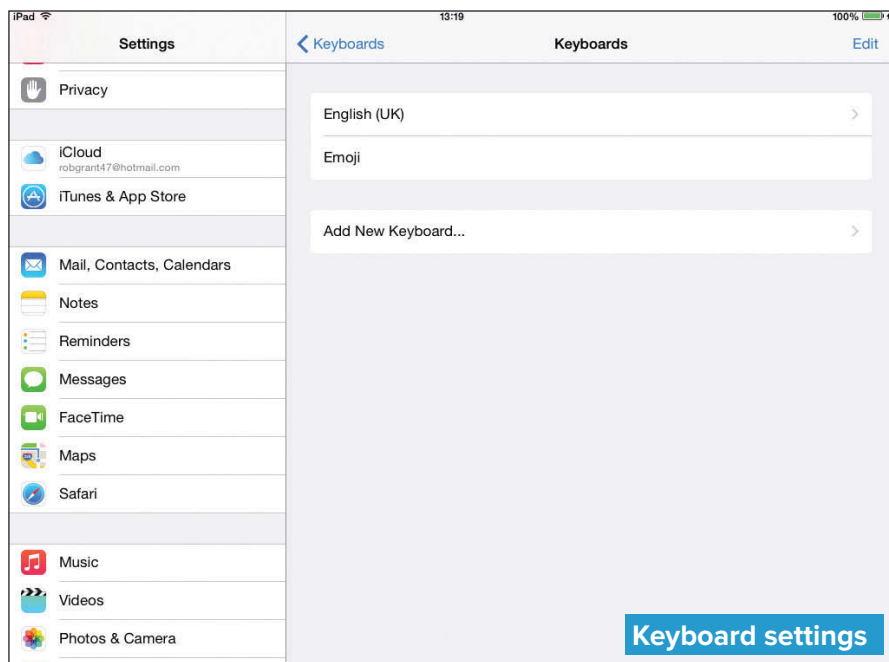
Keyboard settings

allows you access several hundred emoji. In both cases you can use emoji in most apps, whenever you access the onscreen keyboard.

Use emoji on iPhone or iPad

First you need to enable the emoji keyboard. Go to Settings → *General* → *Keyboard*. Now tap *Keyboards*. Select *Add New Keyboard*, and then tap *Emoji*. In the screenshot above, the keyboard has been added.

Now, whenever you are in Mail, Messages or any of the text-input applications, you have to open the emoji keyboard to use the little blighters. When you can see the keyboard, just tap the Smiley face icon to go straight to the good stuff, or press and hold the Globe key and then select Emoji. Tap the icons at the bottom of the keyboard to switch emoji themes. Within each theme, you can swipe left or right to view more. To see emoji you've used recently, tap the Clock icon. It's emoji o'clock, so get cracking.

Get more emoji on your iPhone or iPad

There are multiple apps on the app store that purport to offer additional emoji to your iPhone- or iPad's arsenal. Most are paid for. In each case you

install the app and then enjoy additional and colourful emoji.

If you are new to emoji, I would suggest using the built-in iOS keyboard until you feel you have exhausted its creative capabilities. Otherwise you could end up spending your hard-earned on emoji you neither need nor want. (But then, I am grumpy. And old.)
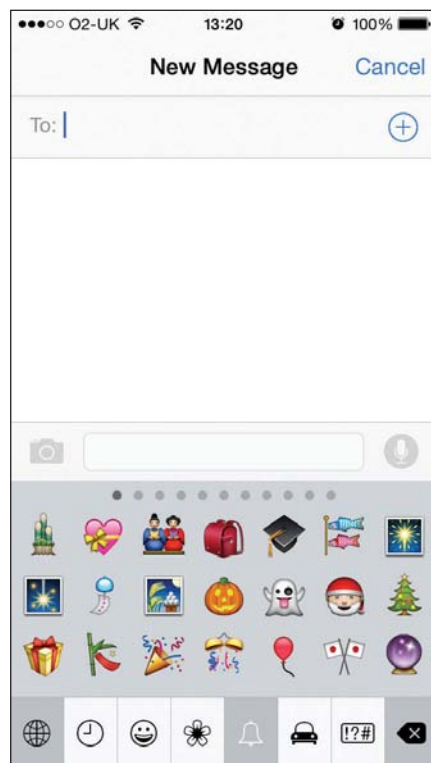
Get iOS emoji on Android

One minor issue with emoji is that although they are standardised, they don't always play nicely between devices on different platforms. Emoji sent from Android to iPhone (and vice versa) don't always display correctly. Perhaps unsurprisingly, many Android users are keen to get their hands on the lovely iOS emoji. A colleague is an Android user, and they have yet to found a way of doing this that doesn't require you to root your Android phone. I know many people are uncomfortable with this, so if you know of another way do let me know at matt_egan@macworld.co.uk.

If I was doing this, I would install BusyBox from the Play Store on my rooted Android phone. BusyBox is a set of extra utilities required by certain rooted apps, in order to work properly. Launch BusyBox and grant it root permissions, then install it. Once you have a rooted phone with BusyBox, all you need to do is install Emoji Switcher from developer Steven Schoen. Launch the app and grant it root permissions. Choose your the iOS emoji. The app will reboot your phone and you will now have iOS emoji. Enjoy them, but use them wisely.
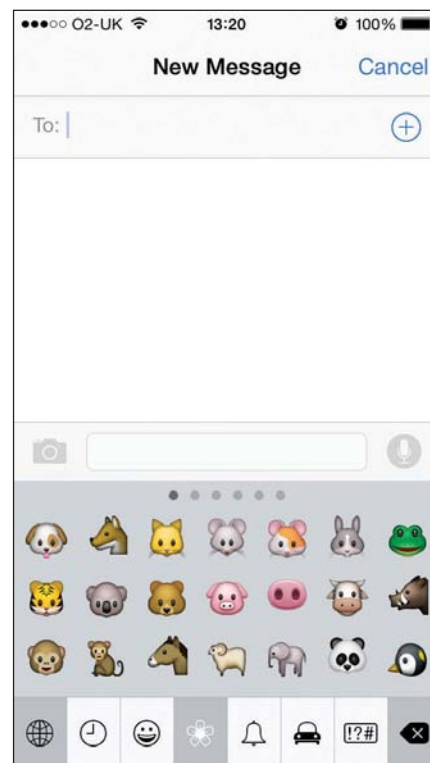
Print from an iOS device

Apple has made it easy to print from an iOS device. Lou Hattersley reports

Apple makes it easy to print from an iOS device by incorporating a wireless printing technology called AirPrint. But what if you don't have a compatible printer? Thankfully, all is not lost. There are a range of options that enable you to print wirelessly to any printer from an iPhone or iPad (with or without AirPrint).

Wireless AirPrint printers

AirPrint allows Apple devices to print over Wi-Fi to suitably equipped printers. The number of devices supporting the technology is growing, but it's always worth checking the specs to ensure that support is built in before you buy a printer. Your options include Epson's Expression Photo XP-950 Printer and HP's LaserJet Pro 200 Colour M251nw AirPrint Printer (pictured right).

With AirPrint, the option to print from iOS will be available under the Share button in any application that supports printing, including Safari and Mail. As long as the printer is connected to the same network and configured correctly (according to the printer manufacturer's instructions) your iOS device should find it without further prompting.

Here's how to print out an email from an iOS device with AirPrint:
• Open the email you want to print. If you want to print an attached document (such as a PDF file), click on the attachment to open it inside the Mail app.

• Tap *Share* (the icon shaped as a curved arrow). If you can't see this, slide up to the top of the email to reveal it.
• Tap *Print*.
• Make sure your printer is listed in the Printer area. If you can't see it, tap Printer and choose your AirPrint printer from the list of Recent Printers.
• Tap *Print*.

Non-AirPrint printers

But what if your printer doesn't support AirPrint? If you have a Mac you're in luck. First, connect the printer to your computer. Next, you'll need to install an app on your iOS device, such as Print n Share or Presto. These apps allow you to print documents via your Mac.

Your computer will, of course, have to be switched on to use AirPrint in this manner, but it's an easy option for wireless printing. If you want your printer located away from your Mac, you'll need to use Apple's AirPort base station.

Add iOS AirPrint support to any printer

There are also devices such as the Lantronix xPrintServer (pictured left) that you can connect to any printer to enable AirPrint printing. Increasingly, even printers that don't directly support AirPrint – but that do have network capability – offer alternative methods.

It's worth checking your printer's documentation to see if, for example, you can print by email or look on the iOS App Store to see if there's a custom app for your printer.

Get unlimited extra lives

Tired of waiting for extra lives in 'wait or pay' lives? Lou Hattersley's cheat lets you get unlimited lives

Normally Candy Crush, Two Dots and similar iOS games, give you a few lives each day, and then make you wait hours for new ones; unless, of course, you're willing to stump up the cash for extra lives. If, however, you are unwilling to shell out your hard-earned cash, the wait can be frustrating. That's where this cheat comes in – it dispenses with the need to wait for new lives.

Hack the clock

In Candy Crush, you get five lives per day. Once these have been used, you'll need to pay to carry on playing. You can, however, fool the game into thinking the time is different by changing the Date & Time setting on your iOS device. It's as simple as that.

Get free extra lives in Candy Crush using Facebook

Another option is to ask your Facebook friends for extra lives. Once you've connected Candy Crush to Facebook, you can use the 'Ask friends for extra lives' option – in effect advertising the game to your friends in return for more playtime. Click the Ask Friends button, pick friends from the list and click the Send button. You can only have up to five lives at a time, so don't ask more than five people. It's best to ask a few friends at a time rather than them all at once. Plus, you don't want to annoy people.

Get free extra lives in Candy Crush on the iPhone

We don't want to annoy our friends, so let's return to the time-hacking cheat we discussed before. Here's how it works in Candy Crush:
• Play until you run out of lives.
• Press the Home Button and tap *Settings*.
• Tap *General ➜ Date & Time*.
• Set the Set Automatically button to *Off*.
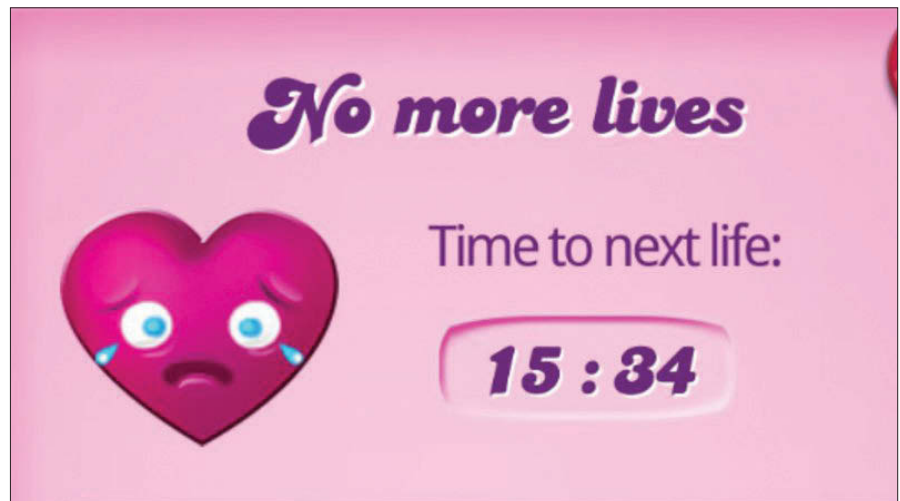
• Tap the date to reveal the time picker.
• Use the wheels on the picker to move the time ahead. It's usually best to move the day wheel (on the left) to tomorrow.
• Press the Home button and tap the Candy Crush icon to launch the game. Check that you have an extra life (don't start playing). If not, you'll need to set the time further forward.
• Tap *Home ➜ Settings ➜ General ➜ Date & Time* and tap *Set Automatically* back to On.
• Return to Candy Crush and start playing the game. The time on your iPhone is set back to normal and you can continue doing this for free unlimited extra lives.

Get free extra lives in Two Dots on the iPhone

The same trick works in Two Dots, as well as various other freemium-style iOS games. When you run out of lives Two Dots will tell you that you need to wait for a specific number of minutes (such as 100 minutes) to get all your five lives back.

Follow the steps above for the Candy Crush trick, but adjust the time to the number of minutes you need to wait. After you have changed the date and time don't forget to use Set Automatically to bring the time on your iPhone back to normal. This doesn't affect the gameplay

in Two Dots, as it only tracks moving forwards in time (not moving backwards).

Get free gems in Dungeon Keeper

Dungeon Keeper is often held up as the poster boy for bad in-app purchasing practices. While it's free to download, you have to wait for your imps to mine stones and gold. You can encourage them to work faster, but you need to spend gems to get imps to complete work. It is these gems that are the in-app purchase. The challenge with Dungeon Keeper is that you really need to spend money to play the game properly at all.

The date and time trick used above doesn't work in Dungeon Keeper. You get a message that states: "Loading. Please wait while your imps get your Dungeon in order". Then you start with just the small amount of stone and gold you would have collected by waiting.

If you really want to play Dungeon Keeper without paying any money at all, TouchArcade has a great collection of tricks you can try:
• Every half hour, visit the imp screen and slap them to speed them up.
• Start saving for a third imp right away.
• Upgrade your warehouses and treasuries as often as possible because it's easy to hit a storage cap.

Top iOS typing tips

Ben Patterson's tips can make typing on your iPhone or iPad a little easier

1. The .com shortcut
Want to type a URL directly into the address bar in Mobile Safari? Don't bother tapping '.com' or '.net'. Instead, just tap and hold the '.' key; when you do, a pop-up balloon will reveal a series of shortcuts, including .co.uk and .com.

2. Nice accent
Don't get caught skipping the accent grave in 'voilà' while typing that email on your iPhone or iPad. You can access a generous portion of accent marks – acute, grave, circumflex, and otherwise – by tapping and holding a letter key (such as 'a').

3. Swipe to type
Sick to death of painstakingly tapping out messages on your device's touchscreen? Try swiping instead.

The concept is simple: Rather than tapping each individual key when typing a word, swipe-to-type keyboards let you slide your fingertip from one key to the next. As your finger loops around the keys, your phone predicts the work you're trying to type – er, swipe.

Sound weird? Indeed, swiping to type does take some getting used to, but it'll become second nature with practice.

4. Caps locked and loaded
See the Shift key? Just double-tap it. When you do, a little horizontal line will appear near the bottom of the Shift key, indicating that you're in All Caps mode. If nothing happens, head to *Settings ➔ General ➔ Keyboard*, and make sure 'Enable Caps Lock' is switched on.

5. You're so money
Want to type the currency symbols for the pound (£), euro (€) or Yen (¥)? Simple. Just tap and hold the key for the dollar sign. When you do, a pop-up bubble will display a series of additional money-minded options.
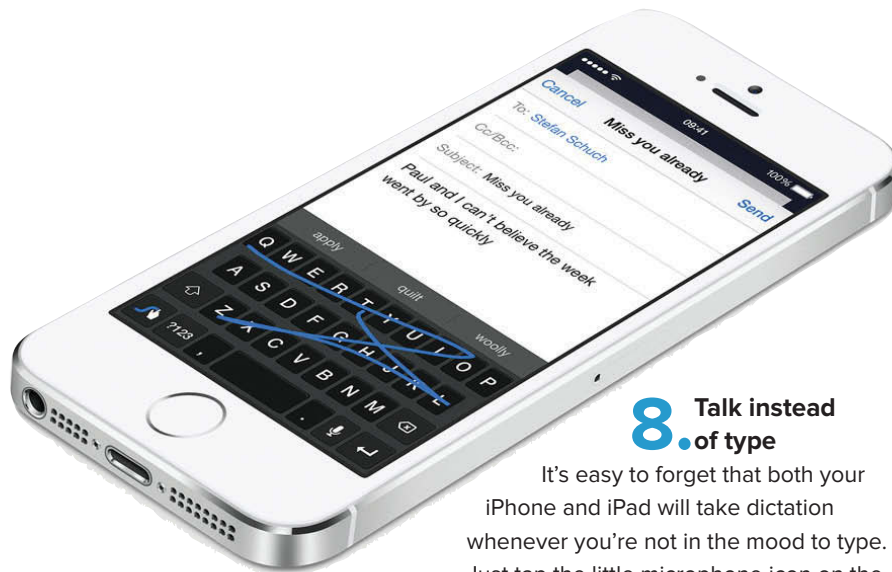
6. Shortcuts for symbols
We've rarely met an em dash I haven't liked – and come to think of it, I'm also a sucker for bullet-pointed lists. How does someone like me survive typing on an iPhone? Easy.

Tap and hold the dash key to reveal even more dashing buttons, including the em dash, a bullet key, and the indispensable underscore. (To, uh, underscore how convenient this is: If you don't use this shortcut, the underscore is three more taps away. First tap the number key, and then the symbols key, then you can tap the underscore.)

7. Embrace the emoji
What's a text message without a smiley? Good question. Luckily, the iOS keyboards come with more emoji than you can shake a stick at (see our guide on page 82).

First you'll need to enable the emoji keyboard: In *Settings ➔ General ➔ Keyboard*, tap *Keyboard* again, then check to see if 'Emoji' is in the list of installed keyboards. If it's not, tap *Add New Keyboard* and find Emoji in the list. Now whenever you use the keyboard, tap the key with the globe icon to access all the gorgeous emoji ready to unleash.

8. Talk instead of type
It's easy to forget that both your iPhone and iPad will take dictation whenever you're not in the mood to type. Just tap the little microphone icon on the keyboard, to the left of the space bar.

As a bonus, the iOS 8 Messages app has two microphone buttons. The rectangular white microphone button to the left of the space bar takes dictation as usual, translating your words into text. But if you're communicating with another iMessages user, you can tap and hold the grey circular microphone button to the right to the iMessage text box to record a voice message that's sent as audio.

9. The number slide
There's really no reason to switch from the keyboard's letters layout to its numbers layout if you only need to type one numeral or bit of punctuation. Instead, press the button with the numbers on it, but don't pick your finger up off the screen. Instead, slide it to the key you want to type, and then lift your finger off the screen. The number/punctuation will be typed and the screen will snap right back to the letters view.

Of course, to type a full stop, you don't even need that slide trick. In *Settings ➔ General ➔ Keyboard*, there's a switch to enable '. Shortcut'. That's the full stop shortcut – once it's enabled, you can just type two spaces at the end of a sentence to automatically make a full stop.

Watch movies on your iPad

Lou Hattersley explains how you can watch films for free on your iPad

There is a range of streaming services operating legally on the App Store. In general they offer a few older classics, along with a few adverts. While you're not going to get the latest blockbusters here. These are great apps for watching free movies on your iPad:

Popcornflix: This is a great place to start, as it serves up lots free movies. The free films on offer tend to be made-for-TV style movies, but there are some classics such as *Austin Powers*. Note, it serves up ads between movies.

OV Guide: This has a wide selection, although we struggled to find anything we'd heard of. It seems to have lots of movies that are almost like the ones you know, such as *An Ant's Life*.

BBC iPlayer: Don't forget to check BBC iPlayer for films. The corporation has started to secure rights for streaming movies, so click on *Categories ➜ Films* to view all the movies.

YouTube

This is a massively underrated service for watching full-length films, as most people don't ever realise that there are feature-length movies on YouTube. People with registered accounts can upload movies longer than 15 minutes, and YouTube will stream up to 11 hours of video from a single file. The challenge is finding decent films to watch amongst all the noise of short video clips. Also, some people upload films that they don't own the rights to, and these are usually taken down within a couple of days.

If you want to watch a particular movie. Open the YouTube app and search for it – you'll be surprised how often you find
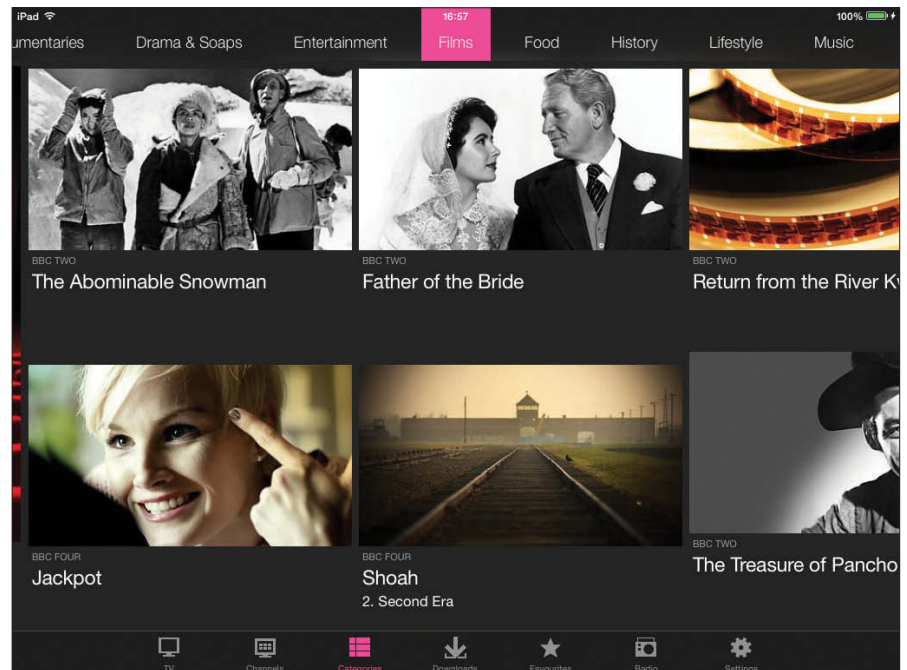
what you are looking for. Browsing through the results is a bit of a nightmare, though. Thankfully, all is not lost. Reddit has a sub called /r/fullmoviesonyoutube. If you sort it by Top and Last Week, you'll find a lot of great movies on to watch.

Take out a free trial

Another option, at least for a short while, is to take out a free trial. You can get a free trial (typically a month) from most of the movie streaming services. You have to sign up, but if you cancel (usually within 30 days) you can move on for free. By going from one service to another you can get a couple of months free:

Netflix: Probably the biggest name in online streaming. £5.99 per month with a 30-day free trial.

Amazon Prime Instant Video: £5.99 per month (or £79 per year along with Amazon One-Day delivery). One month free trial.

Now TV with Sky Movies: Slightly more expensive, at £9.99 per month but the 30-day free trial is worth taking out. Sky says it has 16 new premieres every month, and there are some big hitters here.

If you are planning to take out a subscription with the intention of cancelling before you are charged, remember that it's 30-day trials: not one month. The reason they offer a 30-day free trial is so people think it's one-month and get charged on the 31st day. Count up 29 days and set a reminder in your calendar to cancel the service.

Sky and Virgin Media

If you have a Sky TV or Virgin Media service you can watch the movies and TV shows from your Sky or Virgin account on the iPad. Both services have apps available on the App Store. Search for Sky Go and Virgin TV Anywhere.

YouTube is an underrated service for watching full–length films, as most people don't ever realise that there are feature–length movies on it

Different options for video calling

Joe Kissell looks at your different options when it comes to video calling friends and family

I t should be such a simple thing: you're just going to make a video call. If it were a phone call, you'd dial a number and you'd either get through or be directed to voicemail.

But with video, there are too many variables. Which service will you use? Which software? Is the other person on your buddy list? Are they online? What if you want more than one person on the call? Do all participants have sufficient bandwidth? What if you want to share a screen? And on and on. You can't 'just' make a video call with a random person without thinking through these things.

Even with all those questions answered, technology might not cooperate. I used to have a regular video conference with two other people across the country using Skype, but more often

than not, the connection was awful. After dropping and reestablishing the call a few times, we'd give up and switch to Google+ Hangouts, which behaved better for us. But in recent months, the opposite has happened repeatedly – Google+ Hangouts first drops video, then audio, and we end up switching to Skype, which has been more reliable.

As a result, sometimes I can't decide how to contact another person for a video call, even if the person is a Mac user with all the same software and account types I have. If you ever find yourself in the same boat, you may find my ruminations on the matter to be helpful.

Meet the contenders
There are loads of choices when it comes to videoconferencing. I'm going to

discuss just four: Apple's Messages and FaceTime (both of which are built into OS X and iOS), Google+ Hangouts, and Microsoft's Skype. These are among the most popular services, so it's more likely than not that anyone you want to contact by video uses at least one of them. Choosing a service for which the other participants already have an account is usually the path of least resistance.

You may well find a product or service that you and your colleagues find more reliable or easier to use than one of these four. If so, by all means, go with what works best for you – by mutual agreement, well before any particular call is scheduled. The start of a call (or the few minutes before it) is not the right time for someone to set up an account and become acquainted with new software.

Here are the key differentiating features you should be aware of:

Messages: The OS X version of the Messages app can use Apple's iMessage protocol for text and MMS messages, but for video calls or screen sharing, you must use an account type that supports video (namely, AIM, Jabber, or Google Talk). You can get free accounts for any or all of these services, and set them up in *Messages ➜ Preferences ➜ Accounts*.

Before starting a video call, you must put the other person on your buddy list – but you can add them unilaterally. Although you can have video calls with up to three other people, screen sharing is possible only when you're on a call with one other person. Note, also, that the iOS version of Messages does not support video calls; to use a service like Google Talk on your iOS device, you'll need a third-party app such as the free Vtok.

FaceTime: FaceTime, on either OS X or iOS, is great for one-on-one audio or video calls. Because it's simple to use and available almost anywhere, it's an ideal choice if you know the other person is an Apple user. And it offers highly secure end-to-end encryption. In most cases, you can use either an email address or telephone number to initiate a call, and the other party need not have FaceTime

open or do anything special to log in. But you can't have more than two participants in a video call, and screen sharing isn't available.

Skype: With support for many platforms, multi-person video, and screen sharing (with simultaneous video), Skype is a great all-purpose choice for video calls, and it offers encryption (although with fewer protections than FaceTime). But it comes with a few catches. Before you can call someone, you may need their approval to add them as a contact (depending on their privacy settings). That's fine for friends and business colleagues, but if you're calling someone who doesn't recognise your name, there's no guarantee they'll accept you as a contact. Furthermore, the other party must be logged in to Skype on at least one device.

Google+ Hangouts: Like Skype, Google+ Hangouts can be used on a variety of platforms. On OS X, you log in to your Google account in a web browser. All participants need a Google account as well as the Google Voice and Video Plugin (which you're prompted to install the first time you start or join a video call). iOS users need the free Hangouts app. Using Google+ Hangouts you can share your Mac's screen and have video calls with up to nine other people. If any of the

other participants aren't signed in to Hangouts on at least one device, they'll receive a notification when you try to call them (which they may or may not see immediately).

A matter of protocol

What's the best way to choose among those options? Your mileage may vary, but my own algorithm depends on the nature of the video call.

Scheduled calls: If you're planning recurring calls with your colleagues, the best advice I can give is to experiment, because what works for one pair of callers might fail for the next. Agree in advance that you'll use Skype for the first call, Google+ Hangouts for the next, and so on. Regardless of which service you choose for a given call, have a backup plan – if the call starts stuttering or stalling, all the participants should know which provider they'll switch to, or whether to try a conventional phone call.

Impromptu calls to a colleague: If I want to make an unscheduled video call to a colleague, my first step is to check the usual candidates to see if the person is online – Skype and Google+ Hangouts show participants's status, as does Messages for people in my Buddy List. (The status might be incorrect, but it's a good start.) If I can't ascertain a contact's online status with one of these services and I know the person is an Apple user, I try FaceTime. If none of those methods works, I use email, an instant message, or a phone call to see what works for the other person.

First-time video calls: First-time calls are the trickiest, because most people feel less comfortable chatting with strangers by video than in a phone call. If the person lists a certain service (such as Skype or AIM) on a business card, letterhead, or website, that's a fairly safe bet. Even so, the best idea is to give the other person a heads up first via email.

Apple ID's Recovery Key

Without your Recovery Key, your Apple ID could be lost forever, says Glenn Fleishman

Here's a question that could change the rest of your digital life: Where is the Recovery Key for your Apple ID account? If you haven't enabled two-step verification on your Apple ID (or on multiple such accounts), you don't have to answer that question, because you don't have such an animal. If you have turned on this extra account protection, that question is vital, but don't panic yet if you don't have an answer.

Owen Williams of website The Next Web documented the many hours of cold sweats he went through after someone attempted to crack his account, and Apple disabled normal access, as described in this support document. He couldn't find his Recovery Key, and Apple told him that without it, his account data and access would be lost forever.

And that's true. Apple has designed its two-step recovery system, just like iOS 8's passcode protection and Mac OS X's FileVault encryption, so that if the necessary credentials are lost, the firm cannot recover your data. It's not just being perverse. Apple doesn't retain information in a way that lets it gain access without key pieces of data or devices only you possess. If it has the secrets, then attackers can gain them, too, or it can be compelled to surrender them to government agents. (The one

exception: FileVault offers an escrow option for your drive recovery key, but even then you have to provide precise information to Apple to unlock the encryption that's surrounding your key.)

The fact that an attacked account is locked means that a malicious party could even weaponise that behaviour into you losing your account access forever if you don't know where you stashed your Recovery Key. Some of us set up two-factor authentication nearly two years ago when Apple first offered it.
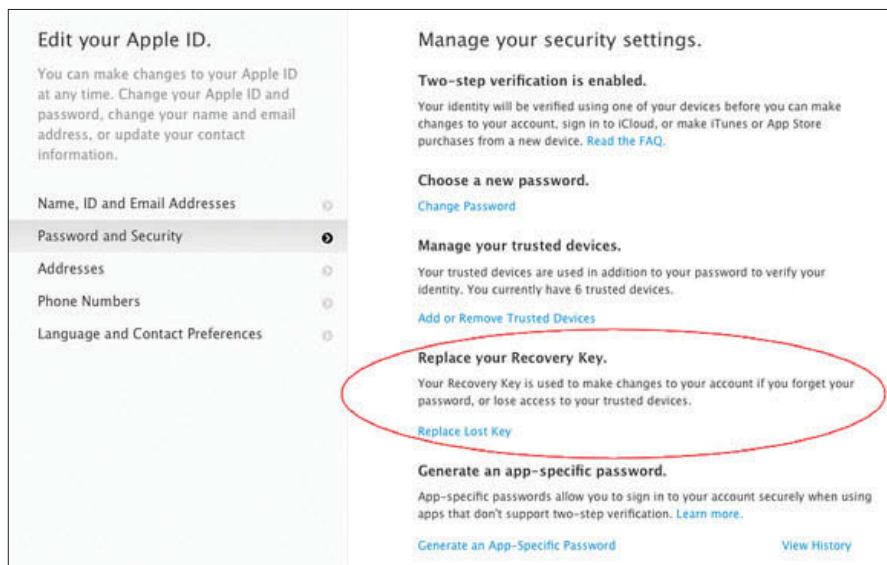
Locked out Without your Recovery Key, Apple can't let you back into your iCloud account—and you'll lose everything you don't have backed up locally.

Edit your Apple ID.

You can make changes to your Apple ID at any time. Change your Apple ID and password, change your name and email address, or update your contact information.

Name, ID and Email Addresses

Password and Security

Addresses

Phone Numbers

Language and Contact Preferences

Manage your security settings.

Two-step verification is enabled.

Your identity will be verified using one of your devices before you can make changes to your account, sign in to iCloud, or make iTunes or App Store purchases from a new device. Read the FAQ.

Choose a new password.

Change Password

Manage your trusted devices.

Your trusted devices are used in addition to your password to verify your identity. You currently have 6 trusted devices.

Add or Remove Trusted Devices

Replace your Recovery Key.

Your Recovery Key is used to make changes to your account if you forget your password, or lose access to your trusted devices.

Replace Lost Key

Generate an app-specific password.

App-specific passwords allow you to sign in to your account securely when using apps that don't support two-step verification. Learn more.

Generate an App-Specific Password   View History

It's time to rummage through your records and make sure you have what you need to prevent someone's attempt to poke your account – or you fumble-finger entering the wrong password a few too many times in a row – into a digital-life disaster. If you can't find it, it's past time to reset your Recovery Key and figure out a better way to retain it.

Recovery Key is your last-ditch effort

Apple built two-step verification around the notion that you'll always have access to at least two of three things: your password, a trusted device, and your Recovery Key. If you lose your password, you enter the Recovery Key and get a message on a trusted iOS device or phone. If you lose all your trusted devices, you can use your password and Recovery Key to add new ones. Lose the Recovery Key, and you can log in and generate a new one.

However, this goes out the window if someone repeatedly enters the wrong password for your Apple ID into any of the places that Apple lets you use that account information. It's as if your password were lost, because Apple has thrown it away. Now you absolutely need the Recovery Key, plus a trusted device.

One chance Unlike Google, which gives you 10 recovery codes at a time, you only get one valid iCloud Recovery Key.

It's unlikely you'll find yourself without all trusted devices, because Apple requires that you use SMS with at least one phone number, and a phone number isn't tied to a physical device. In fact, if you can't find your phone, and you've got iOS 8 installed on it, Yosemite on your Mac, and the phone remains logged into the same iCloud account as your Mac, SMS forwarding will deliver a trusted-device token right to the Mac OS X Messages app. You can also get a carrier to put the number on another phone.

But that still means you need your Recovery Key. If you're using two-step verification, likely because you've read this far, where is it? Did you print it out, take a photo, stash it in a password or data storage program? Tattoo it on your arm? Do you know? If you can't find it in less than five minutes, it's time to reset it.

Go to the Apple ID page, click *Manage Your Apple ID*, and log in, if you haven't already. Now you can click the

Lost key If you don't know where your Recovery Key is, it's time to get a new one. (The old one is invalidated.)

Password and Security item in the left navigation bar, and click *Replace Lost Key*. Follow the steps here, and your old Recovery Key is made invalid and a new one created.

Now, whether or not you just reset your Recovery Key, you must keep track of it from now on. And you need to ask yourself whether anyone else you know or any other location can be trusted with it, so that you're not a single point of failure. By itself, a Recovery Key has no value: someone needs that plus one of your trusted devices or your password.

Thus, it would be a good idea to put a backup copy (not the only copy) somewhere that you can gain access to it, but someone else can't, even if they hold it for you. Encrypt the key using ZIP-based archive encryption or an encrypted disk image via Disk Utility, put that on a USB flash drive, and give it to a friend or partner. Print it out, place it in an envelope, and put it into a safe-deposit box, or perhaps tape it into a drawer at your parents' or children's house. (For years, an old roommate and I had our alarm system emergency disable word taped inside a bookshelf for when we triggered it and inevitably forget it.)

This is certainly a significant drawback to Apple's two-step verification: it's actually so strong, that you can find yourself locked out when you haven't reset your password – when you're the victim of an attack. You can avoid this by making sure you know precisely where your Recovery Key is from now on.

Edit your Apple ID.

You can make changes to your Apple ID at any time. Change your Apple ID and password, change your name and email address, or update your contact information.

Name, ID and Email Addresses

Password and Security

Addresses

Phone Numbers

Language and Contact Preferences

Replace a lost Recovery Key.

If you've lost your Recovery Key, you can generate a new one. After you activate your new Recovery Key, the old one will be deactivated and can no longer be used to reset your password or access your account.

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Whether you're new to Apple and are looking for advice to help get you started, or a Mac fanatic looking to justify your next buy, Macworld is the magazine to ensure you make the right decision

macworld@servicehelpline.co.uk

Buyers' Guide

Mac Pro

UPDATED 19/12/13

Apple's late 2013 Mac Pro has been completely redesigned inside and out. The new model has a cylindrical case, and the entire top acts as a carrying handle. That's possible because the new version is about one-eighth of the size of the previous Mac Pro tower, and stands at 9.9in tall. The new design is built around a 'unified thermal core' that aims to keep the Mac Pro cool.

Under the hood, there's an Intel Xeon E5 processor. It can have up to 12 cores, and offers double the CPU performance of the current Mac Pro. It uses a third-generation PCI Express architecture, and 1866MHz ECC DDR3 RAM. When it comes to graphics, the new Mac Pro has dual AMD FirePro workstation-class GPUs, and can run three 4K displays. It's up to two-and-a-half times faster than its predecessor, and delivers seven teraflops of computer power.

Apple is outfitting the new Mac Pro with PCIe-based flash memory, which is 10 times faster than traditional desktop hard drives. It has four USB 3.0 ports, six Thunderbolt 2 sockets, gigabit ethernet and HDMI.

Price: From £2,499
Pros: PCIe flash memory; six Thunderbolt 2 ports
Cons: No internal expansion options
Macworld preview: tinyurl.com/prj4vp9

iMac

UPDATED 17/10/14

Apple has added a Retina display iMac to its range of all-in-one computers. Only the 27in model gains this – the 21in version doesn't get a hi-res screen. If, however, you don't want the extra expense of a non-Retina 27in option is still available.

All the iMacs come with Intel's fourth-generation Haswell processor. The benefits of this for desktop computers are not as profound as for laptops, as a big factor is lower power consumption, and therefore better battery life. But, Haswell could mean you'll save on your electricity bill, and it will help your machine stay quieter and cooler. The iMac retains the slimline aluminium design of its predecessor along with the beautiful-looking display. build-to-order options is the Fusion Drive – a hybrid storage device combining flash storage with a regular hard drive.

Price: 21.5in £899 to £1,199; 27in £1,449 to £1,599; Retina 5K display, £1,999
Pros: Retina display option, thin design; updated processor; improved graphics
Cons: No optical drive or FireWire 800 ports
Full review: Retina display, tinyurl.com/qhb5rs8; tinyurl.com/pfu6xox

MacBook Pro

UPDATED 11/06/12

Apple removed the 15in model from its non-Retina MacBook Pro range, so only a 13in version is available. Apart from this nothing has changed – it has the same unibody design, upgradability and price, and it remains the only MacBook to have an optical drive. On the inside, there's an Intel Core i5 Ivy Bridge processor, 4GB RAM and a 500GB, 5400rpm hard drive. Connectivity options include USB 3.0, Thunderbolt, FireWire and ethernet. While these specs aren't as impressive as Apple's other MacBooks they are still more than enough for the non-creative professional or the home user. If you want to future-proof your computer, then a number of configuration options are available at the point of purchase, including a 2.9GHz Intel Core i7 processor, 8GB RAM and a 1TB hard drive. Plus, it will run OS X Mavericks, and any other Mac software you may already have.

Price: £899
Pros: USB 3.0; Intel Core i7 Ivy Bridge processors; nVidia graphics; Thunderbolt
Cons: No 15in model available; no Retina display
Full review: tinyurl.com/nsbusw4

MacBook Air

UPDATED 29/04/14

This year's MacBook Air line-up isn't all that different to last year's model, apart from a substantial price decrease. As previously, the 2014 options are available in four standard configurations: two with 11.6in screens and two with 13.3in screens. The new prices place the entry-level 128GB 11in MacBook Air at £749, down £100 from £849. Pricing changes aside, there's a subtle increase in processor speeds for the new machines. All four configurations have the same Intel 1.4GHz dual-core Core i5 processor, which is 100MHz faster than the 1.3GHz dual-core Core i5 processor found in the mid-2013 Air. Everything else is the same as last year's model: 4GB of DDR3 memory, Intel HD 5000 integrated graphics, and either 128- or 256GB of PCIe-connected flash storage. The 11.6- and 13.3in displays keep the same resolutions, 1366x768 and 1440x900, respectively – the new Air doesn't include a Retina display like some analysts had predicted. We were disappointed that the new Airs didn't perform as well in our speed tests as last year's models, although in many tests the newer models outperformed the 2013 versions.

Price: 11in £749 to £899; 13in £849 to £999
Pros: Stylish; super-slim; great battery life; price has been reduced
Cons: Still no Retina display
Full review: tinyurl.com/Ldxfyks

MacBook Pro Retina display

Apple has upgraded its MacBook Pro with Retina display line-up. The 13- and 15in models have been given a small speed bump and their prices cut. It seems likely that Apple has made these slight tweaks to the range predominantly to allow it to bring down pricing, but also because Intel's Broadwell processors – the successor to the Haswell chips used in these Macs and the generation before them – aren't yet available. The screen itself hasn't been upgraded, but it's still stunning: the 15in version offers a resolution of 2880x1800 pixels; while the 13in option has an equally striking 2560x1600 pixels. Connectivity options are just as impressive and include 2x Thunderbolt 2, 2x USB 3.0 and 1x HDMI ports. The MacBooks in this line-up also have the same dimensions and weigh the same as the late 2013 line-up, making it a great portable option.

Price: 13in £999 to £1,399; 15in £1,599 to £1,999
Pros: Stunning Retina display; USB 3.0; thin design; Haswell processors
Cons: No optical drive; expensive; small storage options
Full review: 13in, tinyurl.com/LctLqL8; 15in, tinyurl.com/pugvnuf

Mac mini

Externally, the Mac mini is more or less unchanged from its previous incarnation, save for the introduction of Thunderbolt 2 ports and the loss of FireWire. It's 19.7cm square and 3.6cm deep, which is where it earns its 'mini' name. The entry-level model has a 1.4GHz dual-core i5 chip and 500GB hard drive, while the mid-range option comes with a 2.6GHz dual-core Intel Core i5 chip and a 1TB hard drive. The top model has a 2.8GHz dual-core Intel Core i5 processor and 1TB Fusion Drive. Every model is configurable should you want to boost the specs of your Mac mini. Among the £799 model's build-to-order options are a 1TB SSD, a 3GHz dual-core Intel Core i7 chip and 16GB of RAM. You should note that while this is Apple's most affordable system, you'll need to factor in the cost of a monitor, keyboard and mouse.

Price: £399 to £799
Pros: Thunderbolt 2; small size; 1TB Fusion Drive on top model
Cons: Doesn't come with a monitor, keyboard or mouse
Full review: tinyurl.com/k7c4akh

iPad mini 3

The most obvious new addition to the iPad mini 3 is Touch ID, which will allow you to unlock the device, and to open compatible apps. Apple has also introduced a gold version to the range. That, however, is it as far as new features are concerned. This isn't to say this isn't a great little tablet. It still has a gorgeous-looking Retina display, which offers 326ppi and its diminutive size means it will easily fit into a bag. To power this tablet, Apple has decided to use the same A7 chip as the iPad mini 2 and not the A8X found on the Air 2. The battery life is also the same as its predecessor – 10 hours.

Price: Wi-Fi £319 to £479; Wi-Fi + 4G £419 to £579
Pros: Touch ID; Retina display
Cons: Little to make it stand out from its predecessors
Full review: tinyurl.com/LgLq54t

iPad Air 2

Apple has updated its iPad range, and this time around the company has continued its mantra that slimmer is better – it now measures just 6.1mm wide. It's also lighter than its predecessor – 437g compared to 469g. However, despite its low weight and slimline design, it still feels solid. The big addition is the introduction of Touch ID, which you'll be able to use to unlock the tablet, and to open various apps. The slimline tablet also comes with a new chip – the A8X. This offers a 64-bit architecture and three billion transistors and, according to Apple, is 40 percent faster than the original iPad Air. Another benefit of this processor is that it uses quad-core graphics, something that game developers will be keen to utilise.

Price: Wi-Fi £399 to £559; Wi-Fi + 4G £499 to £659
Pros: Touch ID; A8X chip; slimmer than ever; beautiful screen
Cons: If you already own an iPad there's not enough here to warrant an upgrade
Full review: tinyurl.com/mg9t2cx

Buyers' Guide

iPhone 6

It's clear that the most important change with the iPhone 6 is its size. Yes, the processor is a bit faster and the camera is slightly improved, but it's the 4.7in display that makes the biggest difference. It means a better experience when watching TV shows or movies on your iPhone, it displays photos better, and it allows more information to be shown on the screen at once. In terms of connectivity, the iPhone 6 has better LTE capabilities, and it also has NFC for the first time, which will work together with the company's new Apple Pay mobile payment service. This won't be introduced to the UK until sometime in 2015, though. If you've got an iPhone 5 or older, then the 6 is a solid upgrade that you'll get used to after just a few days of adjustment, but 5s owners might want to consider waiting another year for the iPhone 6s as they've already got a brilliant smartphone and aside from that bigger display the iPhone 6 doesn't bring many other new features to the table.

Price: 16GB £539; 64GB £619; 128GB £699
Pros: New design more comfortable to hold; improved screen
Cons: Reqires inconsistant 'Reachability' tool for one-handed use
Full review: tinyurl.com/k2e

iPhone 6 Plus

iPhone 6 Plus is a stunning piece of design, and its sumptuous 5.5in screen will be a magnificent showpiece for the latest games, movies and web pages. It's also available in capacities up to 128GB, which is great if you want to store lots of programmes and films on your device. The 64-bit A8 chip will improve performance. Whether the clever Reachability feature will be enough to solve the problems of such a large smartphone remain to be seen, however, and the price tag remains intimidating. The iPhone 6 Plus is a huge leap from the iPhone 5s, not in terms of technology so much as in terms of its physical presence. It won't be for everyone, but we are sure that it will pick up many advocates for whom the bigger screen is ideal.

Price: 16GB £619; 32GB £699; 128GB £789
Pros: Great-looking screen; beautiful design;
Cons: Expensive; rear camera sticks out a little;
Full review: tinyurl.com/kn36zee

iPhone 5c

The 5c is the cheapest of Apple's iPhone models. As our *Macworld US* colleagues put it, the 5c "looks a bit like the iPhone 5 had a baby with the plastic-backed iPhone 3GS". This is the first time Apple's handset has been available in anything other than black and white – it's available in pink, yellow, blue, green or white. It's constructed from a polycarbonate shell, crafted from a single piece of plastic, and feels good to hold and well built without being heavy. On the inside is a A6 chip, the same processor as the iPhone 5. If you are thinking of buying a 5c, you should note that since Apple updated its iPhone range, this handset is available only with 8GB of storage, which may not be enough if you have lots of apps.

Price: 8GB £319
Pros: Won't slip out of your hand; colourful; cheapest iPhone
Cons: Only an 8GB version available; colours not to everyone's taste
Full review: tinyurl.com/qjogxkf

iPhone 5s

As with previous iPhone 's' model launches, the 5s looks very similar to its predecessor and feels similar, too, with no noticeable added weight and not much new to look at. However, there are three colour options: silver, gold and 'space grey'. In addition to these colours, the 5s has a metallic ring around the Home button, which is part of the new Touch ID fingerprint sensor feature. This unlocks the device, although you'll still need a passcode as a backup to access the device. In addition to unlocking the 5s, the sensor can be used to make secure purchases from the iTunes Store or the iBookstore. On the inside there's a new A7 chip, making it the first 64-bit phone. According to Apple this means the 5s is twice as fast as the 5. The camera has also been given a significant boost. While it's still 8Mp, it features a five-element Apple-designed lens with a larger f/2.2 aperture. A dual-LED flash should mean better low-light photos.

Price: 16GB £459; 32GB £499
Pros: Decent camera; new colours; fingerprint sensor
Cons: No battery improvements
Full review: tinyurl.com/kn36zee

Technical specifications

Product	Processor	Display	RAM	Storage	Ports and connections	Graphics card	Star rating	Price
Mac mini	1.4GHz dual-core Intel Core i5	None	4GB	500GB (5400rpm)	2x Thunderbolt 2, 4x USB 3.0, HDMI, SDXC card slot, gigabit ethernet, audio in, headphone, IR receiver	Intel HD Graphics 5000	N/A	£399
	2.6GHz dual-core Intel Core i5	None	8GB	1TB (5400rpm)	2x Thunderbolt 2, 4x USB 3.0, HDMI, SDXC card slot, gigabit ethernet, audio in, headphone, IR receiver	Intel Iris Graphics	N/A	£569
	2.8GHz dual-core Intel Core i5	None	8GB	1TB Fusion Drive	2x Thunderbolt 2, 4x USB 3.0, HDMI, SDXC card slot, gigabit ethernet, audio in, headphone, IR receiver	Intel Iris Graphics	N/A	£799
iMac Retina 5K display	3.5GHz quad-core Intel Core i5 processor	27in Retina	8GB	1TB Fusion Drive	Headphone, SDXC card slot, 4x USB 3.0, 2x Thunderbolt 2, gigabit ethernet	AMD Radeon R9 M290X	N/A	£1,999
iMac	1.4GHz dual-core Intel Core i5	21.5in LED (BL)	8GB	500GB (5400rpm)	Headphone, SDXC card slot, 4x USB 3.0, 2x Thunderbolt 2, gigabit ethernet	Intel HD Graphics 5000	★★★☆☆	£899
	2.7GHz quad-core Intel Core i5	21.5in LED (BL)	8GB	1TB (5400rpm)	Headphone, SDXC card slot, 4x USB 3.0, 2x Thunderbolt 2, gigabit ethernet	Intel Iris Pro Graphics	★★★★★	£1,049
	2.9GHz quad-core Intel Core i5	21.5in LED (BL)	8GB	1TB (5400rpm)	Headphone, SDXC card slot, 4x USB 3.0, 2x Thunderbolt 2, gigabit ethernet	nVidia GeForce GT 750M with 1GB of GDDR5 memory	★★★★★	£1,199
	3.2GHz quad-core Intel Core i5	27.5in LED (BL)	8GB	1TB (7200rpm)	Headphone, SDXC card slot, 4x USB 3.0, 2x Thunderbolt 2, gigabit ethernet	nVidia GeForce GT 755M with 1GB of GDDR5 memory	★★★★★	£1,449
	3.4GHz quad-core Intel Core i5	27.5in LED (BL)	8GB	1TB (7200rpm)	Headphone, SDXC card slot, 4x USB 3.0, 2x Thunderbolt 2, gigabit ethernet	nVidia GeForce GTX 775M with 2GB of GDDR5 memory	★★★★★	£1,599
Mac Pro	3.7GHz quad-core Intel Xeon E5	None	12GB	256GB (configurable to 512GB or 1TB)	4x USB 3.0, 6x Thunderbolt 2, dual gigabit ethernet, HDMI 1.4 Ultra HD	Dual AMD FirePro D300	N/A	£2,499
	3.5GHz six-core Intel Xeon E5	None	16GB	256GB (configurable to 512GB or 1TB)	4x USB 3.0, 6x Thunderbolt 2, dual gigabit ethernet, HDMI 1.4 Ultra HD	Dual AMD FirePro D300	N/A	£3,299
MacBook Pro with Retina display	2.6GHz dual-core Intel Core i5	13in Retina	8GB	128GB flash storage	2x Thunderbolt 2, 2x USB 3.0, HDMI, SDXC card slot	Intel Iris Graphics	★★★★★	£999
	2.6GHz dual-core Intel Core i5	13in Retina	8GB	256GB flash storage	2x Thunderbolt 2, 2x USB 3.0, HDMI, SDXC card slot	Intel Iris Graphics	★★★★★	£1,199
	2.8GHz dual-core Intel Core i5	13in Retina	8GB	512GB flash storage	2x Thunderbolt 2, 2x USB 3.0, HDMI, SDXC card slot	Intel Iris Graphics	★★★★★	£1,399
	2.2GHz quad-core Intel Core i7	15in Retina	16GB	256GB flash storage	2x Thunderbolt 2, 2x USB 3.0, HDMI, SDXC card slot	Intel Iris Pro Graphics	N/A	£1,599
	2.5GHz quad-core Intel Core i7	15in Retina	16GB	512GB flash storage	2x Thunderbolt 2, 2x USB 3.0, HDMI, SDXC card slot	Intel Iris Pro Graphics + nVidia GeForce GT 750M	★★★★★	£1,999
MacBook Pro	2.5GHz dual-core Intel Core i5	13in LED (BL)	4GB	500GB (5400rpm)	2x USB 3.0, HDMI, SDXC card slot, FireWire 800, Thunderbolt	Intel HD Graphics 4000	N/A	£899
MacBook Air	1.4GHz dual-core Intel Core i5	11in LED	4GB	128GB flash storage	2x USB 3.0, Thunderbolt	Intel HD Graphics 5000	★★★★★	£749
	1.4GHz dual-core Intel Core i5	11in LED	4GB	128GB flash storage	2x USB 3.0, Thunderbolt	Intel HD Graphics 5000	★★★★☆	£899
	1.4GHz dual-core Intel Core i5	13in LED	4GB	128GB flash storage	2x USB 3.0, Thunderbolt, SDXC card slot	Intel HD Graphics 5000	★★★★★	£849
	1.4GHz dual-core Intel Core i5	13in LED	4GB	128GB flash storage	2x USB 3.0, Thunderbolt, SDXC card slot	Intel HD Graphics 5000	★★★★★	£999

Buyers' Guide

Apple AirPort Time Capsule   Full review: tinyurl.com/Lh6pjqu   ★★★★☆

apple.com/uk, 2TB £249, 3TB £349

Back up your Mac with AirPort Time Capsule, Apple's wireless hard drive that works with Time Machine in OS X. This new version is also a Wi-Fi base station featuring 802.11ac technology, which is said to provide up to three times faster Wi-Fi than 802.11n.

Pros: Easy to use; combines network storage and high-speed 802.11ac Wi-Fi in a single unit

Cons: Expensive; doesn't include an ADSL or modem cable

Apple AirPort Extreme Base Station   Full review: tinyurl.com/mfdLLsc   ★★★★★

Macworld EDITORS' CHOICE

apple.com/uk, £169

The latest version of the AirPort Extreme Base Station offers dual-band Wi-Fi technology to provide wireless access for devices including Macs, iOS devices and the Apple TV.

Pros: Excellent performance; nice design; easy to set up

Cons: Expensive; lacks advanced features

Apple Lightning to 30-pin adaptor   Full review: tinyurl.com/nkqfbfz   ★★★★☆

apple.com/uk, £25

If you want to connect the iPhone 5, 5s or 5c to an speaker system with a 30-pin dock, or other 30-pin audio or synching dock device, then this is the way to do it (although we'd suggest the version with a cable to avoid the precarious balancing act). We're disappointed that it works only with audio and not video.

Pros: Enables you to connect the iPhone 5, 5s or 5c to older dock and speaker systems

Cons: Puts an extra 2cm on the iPhone 5; Lightning feels a bit small to be holding up an iPhone; doesn't output video; expensive

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Apple Thunderbolt Display   Full review: tinyurl.com/nkhkzm8   ★★★★☆

apple.com/uk, £899

For owners of the 2011 MacBook Air, the Thunderbolt Display is a fantastic way to get iMac-like features in one of the lightest laptops available. If your Mac doesn't have Thunderbolt, the inflexible Thunderbolt Display is a little less interesting.

Pros: Can charge Apple laptops; USB 2.0, FireWire 800 and ethernet connectivity; single cable from Mac cuts down clutter

Cons: Stand lacks flexibility; reflective screen limits display placement; few customisation options

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Apple 27in LED Cinema Display   Full review: tinyurl.com/onaxe2n   ★★★★☆

apple.com/uk, £899

Apple's 27in LED Cinema Display makes a good companion to any Mac with a Mini DisplayPort connection, but is especially well suited to portable Mac users who can take advantage of the MagSafe power connector and the display's USB ports to attach peripherals.

Pros: MagSafe connector to charge Mac portables; built-in speakers and iSight

Cons: Limited adjustment options; glossy screen is prone to glare; Apple doesn't officially support using the display with anything but Mini DisplayPort

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Apple Magic Trackpad   Full review: tinyurl.com/qd474vb   ★★★★☆

apple.com/uk, £59

If you're a desktop Mac user and a fan of the multitouch trackpads on Apple's laptops, the Magic Trackpad is for you. It gives you the same clickable glass surface and multitouch gestures as those laptop trackpads in a wireless desktop model, with the bonus of nearly twice the trackpad area.

Pros: Large multitouch surface; works identically to Apple's laptop trackpads; rugged, portable design matches Apple's keyboards; easy setup

Cons: Not as precise as using a mouse or trackball; not ideal for large screens or multiple displays

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Apple Magic Mouse   Full review: tinyurl.com/nc9o95e   ★★★★☆

apple.com/uk, £59

Although it's not perfect, the Magic Mouse successfully combines design and usability. It's great as a two-button wireless mouse, but if you need more than two buttons, the Magic Mouse is not for you.

Pros: Looks stunning; multitouch is easy to master; excellent tracking; very fast reconnect after idle

Cons: Low profile; may not be comfortable for larger hands; some modes are confusing; buttons and speed settings can't be programmed; expensive

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Apple Keyboard   Full review: tinyurl.com/px5rj8c   ★★★★☆

apple.com/uk, £56

As a portable option that makes typing on the Mac more comfortable, Apple's own Bluetooth keyboard also complements any iOS device, although you would need an additional case or stand for your iPhone or iPad to make typing truly convenient.

Pros: Low profile; lightweight; portable; Apple function keys; instant pairing; great brushed-aluminium styling

Cons: Some function keys missing; no carry case; no numeric keypad; could be too cramped for some users; no dock for iOS devices

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Apple TV   Full review: tinyurl.com/q3qa6pz   ★★★★☆

apple.com/uk, £79

There's a lot to like about the Apple's set-top box: it's well-built and easy to use; and now that Apple has reduced the price, it's no longer the most expensive option for streaming TV. However, the Apple TV – at least in the UK – still doesn't offer the variety of content offered by much of the competition.

Pros: Relatively inexpensive, easy-to-use and stylish set-top box

Cons: Not much content; ties you in to iTunes

Apple AirPort Express Base Station   Full review: tinyurl.com/q4xqszq   ★★★★☆

apple.com/uk, £79

Owning an Apple router is a great option for those with multiple Apple devices, and it's an easier and smarter way to set up and manage a network in the home or small office. Its big brother's faster ethernet connections and external hard drive support may be worth paying the extra for.

Pros: Small and neat; AirPlay functionality; dual antennae; good software interface that can be used from Mac or iOS device

Cons: No longer plugs directly into a wall; has only 100base-T ethernet sockets

Apple OS X Yosemite

Full reviews: tinyurl.com/ohv23hs N/A

apple.com/uk, Free

Apple's latest operating system is available to download now and comes with some exciting new features. The biggest of these is Continuity, which makes it easier to work with, and switch between, all your OS X and iOS devices. Yosemite has also been redesigned, making it easier to use.

Pros: Continuity between Mac OS and iOS; redesigned interface; free to upgrade

Cons: Not all of the features work on every Mac – AirDrop and Continuity

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Apple iOS 8

Full reviews: tinyurl.com/kmavwnw ★★★★★

Macworld EDITORS' CHOICE

apple.com/uk, Free

iOS 8 has a host of small but convenient tweaks (particularly in Messages, Mail and Photos, but throughout the system), and opens up new possibilities for app developers to get creative. Widgets are a big addition, third-party keyboards are a huge addition, and we can't wait to see what games developers do with Metal.

Pros: Continuity between Mac OS and iOS; widgets; QuickType and third-party keyboards

Cons: Needs a large amount of space to install

Apple Final Cut Pro X 10.1

Full reviews: tinyurl.com/phs7zc7 ★★★★☆

apple.com/uk, £199

With Final Cut Pro X, Apple's video editor has finally come of age, with improvements such as enhanced libraries and improved timing options. The software has also been optimised to make full use of the new Mac Pro.

Pros: Flexible media management; added editing functionality; third-party plug-in support; 4K editing workflow

Cons: Collaborative workflows needs careful management

Apple Logic Pro X

Full reviews: tinyurl.com/nfgavnz ★★★★★

Macworld EDITORS' CHOICE

apple.com/uk, £139

Logic Pro X offers a lot of great new features at a price that even starving musicians can afford. Thanks to its easier-to-use interface, Logic Pro X becomes a viable next step for GarageBand users, and everyone with an iPad should be happy with the convenience wrought by the free Logic Remote app.

Pros: Affordable; easy-to-use interface; realistic sounds; great new features

Cons: Not compatible with 32-bit plug-ins

Apple iTunes 12

Full reviews: tinyurl.com/kj32hvu ★★★☆☆

apple.com/uk, free

Apple's new iTunes 12 makes the music manager cleaner, clearer and easier to use, but it's still missing out on a whole generation of social media. It's time Apple took iTunes apart and rebuilt it from scratch.

Pros: Cleaner interface; neat integration of media library and iTunes Store; apps starting to become less prominent

Cons: Remains a cluster of many disparate services; lacks focus; no iTunes Radio in the UK; lacks Facebook or social media integration; missing HD Audio

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Apple iLife: GarageBand, iMovie, iPhoto

Full reviews: tinyurl.com/Lpz6sdL, ★★★★☆

apple.com/uk, free upgrade or £10.49   tinyurl.com/L55ycea, tinyurl.com/qa5bq4z

Apple has overhauled its iLife range of applications, which have been redesigned to work with both OS X Mavericks and iOS 7. Along with support for iCloud integration and 64-bit coding, the software offers users a streamlined interface and hundreds of new features.

Pros: GarageBand: Drummer track option; iCloud support. iMovie: Better editing tools; new interface. iPhoto: 64-bit support offers improved performance

Cons: GarageBand: Crashes some older Macs; can no longer create a podcast. iMovie: No more chapter markers. iPhoto: Photo Stream sharing options are poorly explained

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Apple iWork: Keynote, Numbers, Pages

First reviews: tinyurl.com/mkfd9to, ★★★★☆

apple.com/uk, £13 each   tinyurl.com/nov5uor, tinyurl.com/ofht5qg

It's been a long time coming, but Apple has finally updated its suite of iWork applications. Each program has been designed to be used on the Mac, iOS and iCloud, so you'll be able to edit a document from different devices. Not only that, but the suite has a new interface that promises to make creating beautiful documents easy.

Pros: Keynote: Simplified toolbar; new transitions and animations. Numbers: Beautiful interface; saves documents online. Pages: Excellent editing tools; Format Inspector

Cons: Keynote: Interface over-simplified. Numbers: Scrappy Excel conversion. Pages: Missing standalone page-layout tools

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iWork for iCloud beta: Pages, Keynote, Numbers

Full review: tinyurl.com/kk5cvyv N/A

apple.com/uk, free   tinyurl.com/osz2w97, tinyurl.com/nfn843c

The different applications that make up iWork for iCloud are beautiful to behold and capable of making equally gorgeous documents. Although we encountered a few bugs, for example, you can't collaborate with others in Pages, it is still in beta. And it's free.

Pros: Gorgeous interface; can access and edit documents anywhere; saves documents online; free

Cons: Not compatible with all browsers; not as many tools as desktop counterparts

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Apple Aperture 3

Full review: tinyurl.com/ppc2d6d ★★★★☆

apple.com/uk, £54

A lot has changed in this version of Aperture, so much in fact that it feels a little different, but it's all the better for it: improved RAW engine, updated sorting options, more powerful search features, much more versatile adjustments tools, among many others.

Pros: Vastly improved slideshows; impressive new brushes; multitouch aware; ability to split and merge libraries; easy export to Flickr and Facebook

Cons: Sporadic reports of problems when upgrading older libraries; web page creation not overhauled; need a powerful Mac and lots of RAM to run well

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Apple Logic Express 9

Full review: tinyurl.com/qcyo2yu ★★★★★

Macworld EDITORS' CHOICE

apple.com/uk, £159

Logic 9 is first-class home-recording software for all types of musicians, especially guitarists. It offers streamlined audio editing, plenty of loops and instruments, stacks of virtual amps/speakers and pedals for guitarists, and it reads GarageBand files.

Pros: Plenty of virtual amp/speaker/pedal combos; ability to add chord diagrams to printed music; lots of loops and instruments; high-quality effects

Cons: Interface still dense despite streamlining; could use more templates and a tutorial for beginners

Buyers' Guide

TwoDots
Full review: tinyurl.com/oezrnua
★★★★☆

weplaydots.com, Free (in-app purchases)

Although connecting dots may not be the most thrilling of concepts, the introduction of levels with increasing difficulty throughout adds a level of addictiveness that the original 'Dots' just can't match. The simple design of the game still remains, with all the attention on the puzzle in hand.

Pros: Fun; simple design; addictive

Cons: Could get expensive if you don't resist in-app purchases

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Thomas Was Alone
Full review: tinyurl.com/Lv7gtse
★★★★☆

bossastudios.com, £3.99

Thomas Was Alone is artful without graduating into a full-on art game, and an accomplished piece of game design. It's an attractive, thoughtful and original series of platforming puzzles, with an unexpectedly satisfying (if light) story popping its head in from time to time. A fine iPad game.

Pros: Clever platform-puzzle gameplay; beautiful and original design; finely-tuned difficulty curve

Cons: Danny Wallace's voice-over is rather jaunty, though, this can be turned off; hardcore puzzle addicts may not find the game brutal enough

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Leo's Fortune
Full review: tinyurl.com/ncq65cu
★★★★☆

leosfortune.com, £2.99

A visually dazzling, fast-paced – and now Apple Design Award-winning – platform game that's frequently a treat, but also sometimes a bit too tough for its own good. Still, the smart design ensures that almost anyone can finish the quest, and speedruns are there for the truly dedicated to master.

Pros: Plenty of levels; inventive traps; looks lovely; surprisingly great voice acting

Cons: A few too many leaps into the unknown; insanely tight speedrun targets

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FTL: Faster Than Light
Full review: tinyurl.com/nt7ymmk
★★★★★
Macworld EDITORS' CHOICE

ftlgame.com, £6.99

It's not cheap for an iPad game, but FTL: Faster Than Light is well worth the money, thanks to its gripping, merciless gameplay and rich depth of content. (This game incorporates the Advanced Edition that PC gamers will be familiar with.) Highly recommended.

Pros: Tense gameplay; addictive; every game is different

Cons: Expensive; some might find it off-puttingly cruel

Threes!
Full review: tinyurl.com/qzyqwwL
★★★★★
Macworld EDITORS' CHOICE

asherv.com/threes, £1.49

Threes is a great iPhone puzzle game. Attractive, potently addictive, simple yet full of strategic depth, Threes (or 'Threes!' to give the official title) is an early contender for iOS game of the year. A wholehearted recommendation.

Pros: Beautifully simple interface; real strategic depth

Cons: Lack of instant restart button

Adobe Lightroom Mobile for iPad
Full review: tinyurl.com/pmet6r7
★★★☆☆

adobe.com/uk, free as part of Adobe Creative Cloud

If you are a Creative Cloud subscriber and a power user of Lightroom 5.4, downloading this to your iPad is a no-brainer. Despite several glaring omissions, which hopefully will be addressed in version 2.0, it offers a useful mobile extension to a professional photography workflow.

Pros: Sync with Lightroom Desktop; Collections; range of image adjustments and preset effects; integration with iOS camera roll

Cons: Limited rating system; no keywording; no RAW support; available only to Creative Cloud subscribers; slow to sync; no Flickr or Behance; exports low-res proxy files

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VSCO Cam
Full review: tinyurl.com/mLu542x
★★★★★
Macworld EDITORS' CHOICE

vsco.co, free

A great set of editing tools along with some beautiful, evocative photo presets, available in both free and paid versions, makes VSCO Cam an essential app for anyone who takes photos on an iPhone. It elevates simple snaps to something approaching art, while showcasing the creative potential of Apple devices to all.

Pros: Stunning photo presets; excellent photo editing tools; ability to import images; full-resolution image making and editing; good support

Cons: Some tools are available only on newer iDevices; nine 'Top In-App Purchases' could prove expensive if bought individually over time

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Analog Film
Full review: tinyurl.com/ngynyos
★★★★★
Macworld EDITORS' CHOICE

ordinaryfactory.wordpress.com, £1.99

It's difficult to determine how authentic Analog Film is in relation to the film stock it claims to recreate digitally, but the results are both attractive and evocative. Despite the lack of even basic editing tools, we love the choice of black-and-white effects, which can add style and substance to even the most casual of snaps.

Pros: Around 250 film stock presets produces subtle yet varied film-like results; plenty of black-and-white variations; simple user interface; compatible with older iOS devices

Cons: Lacks editing tools, including ability to adjust, crop, straighten images; no frames or borders

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Scout Camera
Full review: tinyurl.com/n6Ltopk
★★★★★
Macworld EDITORS' CHOICE

crushapps.com, £1.49

Scout Camera's great strength is to place emphasis on the photographer capturing a moment, not the process of editing images retrospectively using your iPhone or iPad. Although you can combine the app with others to good effect, it still excels as a creative tool that requires little more than a keen eye and steady hand.

Pros: Great range of adjustable colour filters and artistic crops; beautiful, understated user interface; emphasis on capturing the moment not editing images endlessly

Cons: No optional grid lines for ensuring straight photographs; no ability to import existing photos for editing; lacks full range of editing tools; rather modest iOS 7 makeover

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Perfect B&W
Full review: tinyurl.com/nzz24jc
★★★★★
Macworld EDITORS' CHOICE

ononesoftware.com, £1.49

There are plenty of photo manipulation apps on the market, but for getting arty with monochrome images, especially with one-click looks, this one is great. Precision tools among the Options would be interesting, but at this price it's hard to compare the app with more powerful features present in desktop image-editing software.

Pros: Instant preset artistic looks; takes full advantage of iOS camera; integration with social media; compositional aids; non-destructive workflow; inexpensive

Cons: Some of the manual adjustment options could be fine-tuned and improved; more border/frame choices would be welcome

Paperless
Full review: tinyurl.com/oLgnzqk ★★★★★

crushapps.com, £1.99

Paperless will appeal to those who want to keep track of daily tasks, and anyone who has more long-term goals and even dreams. As Paperless doesn't set date sensitive goals, it's a good way to ensure things get done at your own pace, free of the disappointment of missing deadlines.

Pros: Attractive, productive user interface; wide appeal; good range of features including ability to sync notes via Dropbox; search function; password protection

Cons: Procrastinators may find the lack of set deadlines and alerts frustrating; no desktop version; slightly steeper learning curve than some list-making apps

Vesper
Full review: tinyurl.com/ktkbbdc ★★★★☆

vesperapp.co, £2.49

Vesper shows a lot of potential with a beautiful, aesthetically pleasing user interface that's a pleasure to use. It's a fine example of Apple's iOS 7 radically streamlined redesign, and we only hope new features – synching of notes particularly – are on the developer's to-do list.

Pros: Clean, attractive interface; intuitive design makes for productive note-taking and good navigation; ability to add and adjust text and add photos; shows great potential

Cons: Synching options on the to-do list; no iPad native version; no Mac version; cheaper and free alternatives; a few iOS 7 bugs noted on Twitter

Clear+
Full review: tinyurl.com/L4twwm8 ★★★★☆

realmacsoftware.com, £2.99

Embracing Apple's iOS 7 redesign and new features, Clear+ is one to-do list that's done right, leaving no excuses not to start organising your daily tasks. Beautifully considered, Realmac Software have crafted an app that's intuitive to use and has real longevity, one that best showcases Apple's recent focus on simplicity of design.

Pros: Potential to speed productivity and organise daily tasks; now with iOS 7 tweaks and enhancements; attractive, intuitive interface; modest learning curve

Cons: No Reminders as yet; not a radical overhaul of the previous Clear app; iOS 7 only update; some features are iPad only, interface may look like a Windows phone app

Day One
Full review: tinyurl.com/qgtjm44 ★★★★☆

dayoneapp.com, £6.99

With Day One, the filters are off. Free of the Facebook effect, your life and thoughts become your own. There are no work colleagues to fear offending, no friends who'll feel left out. It's a diary for the social-media age that you don't need to share.

Pros: Integrates with iOS version; markdown support; calendar-based input

Cons: No local encryption; only one image per entry

Parallels Access
Full review: tinyurl.com/p68ebm2 ★★★★☆

parallels.com/uk, £54 per machine, per year

It's a shame that a truly innovative piece of software that shows real transformative potential is so expensive. Compared to its free rivals, Parallels Access is the clear winner on feature count, and its ability to rejig a desktop display on to an iPad's screen is second-to-none, but at £54 per machine per year it's more than we'd pay.

Pros: Appification process is fantastic; makes Mac remote desktop much easier to use

Cons: Too expensive; replaces a similar but cheaper app; currently works only on iPad

Facebook
Full review: tinyurl.com/Lyn5xLL ★★★☆☆

facebook.com, free

On the whole Facebook 8.0 for iPad and iPhone is an improvement over the previous version. It's a slick and clean app that's easy to use, and with it installed you may hardly ever use the Facebook website again. We're also glad to see that Facebook improve matters with a slew of speed enhancements and bug fixes.

Pros: Clean interface; ability to limit sharing to select audiences; good integration with iOS

Cons: No easy way to just view stories from Friends; not so easy to manage friends lists; no trending or detailed information

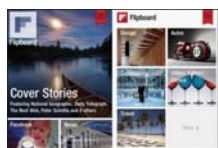### TuneIn Radio Pro
Full review: tinyurl.com/LLuLqo5 ★★★★★

tunein.com, 69p

The addition of ads on what's billed as a pro app aside, TuneIn Radio Pro is still an excellent choice for enjoying radio from the UK and anywhere in the world. The ability to catch up with on-demand podcasts and record content for offline playback is a bonus, which only enhances an already great listening experience.

Pros: Impressive choice of content from around the world; ability to catch up with podcasts; record function; option to save favourite channels

Cons: Recent addition of ads on TuneIn Radio Pro; broadcasters restrict some content due to regional rights; similar TuneIn Radio is free

Flipboard
Full review: tinyurl.com/Lb3qg83 ★★★★★

flipboard.com, free

Flipboard is a must-have app, more so with the introduction of iOS 7, one that showcases Apple's invention to great effect, while maintaining a lead over similar social-news aggregators. Beautifully tactile and responsive, it makes reading anything on your iDevice an absolute pleasure.

Pros: Attractive, clean user-friendly design; good range of pre-defined news categories; ability to customise news and sources to suit own interests

Cons: Some new features are iOS 7-specific; minor bugs reported

Shazam
Full review: tinyurl.com/ndbht56 ★★★★★

shazam.com, free

For music fans, Shazam is an essential app, one that should also appeal to casual users who simply want to identify a song from an ad or drama. Its ability to identify even the most obscure tracks is very impressive.

Pros: Excellent hit rate identifying tracks; improved user interface; good iTunes and YouTube integration; ability to share track information via Facebook and Twitter

Cons: Auto Tagging currently iPad only; mainstream tracks dominate music discovery extras in Shazam Pulse and interactive maps

Yahoo Weather
Full review: tinyurl.com/qemq7zn ★★★★★

uk.yahoo.com, free

Yahoo Weather stands out thanks to accurate forecasts, good balance of information and an attractive yet simple design. The addition of Flickr photos reflecting different times of the day from across the world, is both a worthy addition and a distraction on days when you wouldn't want to go out unless you had to.

Pros: Accurate forecasts; attractive design; cool use of Flickr/Project Weather photos; ability to save locations to favourites; interactive radar, satellite, heat, and wind maps

Cons: No Notification Centre integration or weather alerts; Ultraviolet information is available only in select countries

Buyers' Guide

Simple Audio Listen
Full review: tinyurl.com/pompxbn ★★★☆☆

www.simpleaudio.com, £399

A price tag of £399 is pretty steep for a set of speakers that will just sit on a desk with your computer. However, we were impressed by the sound quality, and they will earn their keep if you use your Mac and Windows PC as your main music system at home.

Pros: Compact design; impressive sound quality with firm bass; Bluetooth option for mobile devices

Cons: Expensive; no equaliser controls

Maxell MXSP-BT3100
Full review: tinyurl.com/Lf4y4he ★★★☆☆

uk.maxell.eu/en/, £170

The Maxell MXSP-BT3100 is around half the price of the similarly specified competition, which makes it look better value. But £170 is still no small outlay and we'd expect better quality and a less plasticky or spitty sound for the money. Against some higher-priced wireless speakers we've reviewed, it doesn't look such bad value.

Pros: Relatively intelligible voice reproduction; extended and harmonious treble compared to much competition

Cons: Plasticky coloration; squawks at higher volumes; no aptX capability

Edifier Luna Eclipse
Full review: tinyurl.com/onbz63n ★★★☆☆

edifier-international.com, £150

Fabulous styling goes some way to endear these speakers, and some clever electro-acoustic tricks help move the sound upscale for their size. Ultimately, the speakers proved just too wearing on the ears, brought down by low-grade amplifiers and a third-rate Bluetooth audio codec.

Pros: Sleek; modern styling; discreet; spacious sound; active crossovers

Cons: Edgy; brittle sound at times; lacking in musical naturalness

Bayan Audio Soundbook X3
Full review: tinyurl.com/oevqdp7 ★★★☆☆

bayanaudio.com, £250

This is a smart and well-made compact Bluetooth speaker, with the added benefit of an easy-tune FM radio. While competent for quieter if muffled background kitchen chat radio, it lacks any subtlety when in its full-volume element. It may have some style and convenience, but it's overpriced.

Pros: Clever industrial design like an opening book; neat style

Cons: Muffled indistinct sound; no high-frequency presence; tune-free bass

Audio Pro Addon T10
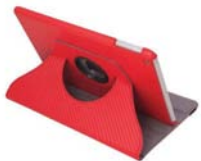Full review: tinyurl.com/qbnzny6 ★★★☆☆

audiopro.com, £300

The Audio Pro Addon T10 can appeal with its retro square box, and its decent build quality, plus enormous potential for sheer volume that helps to justify the high price. Overall, though, it failed to inspire thanks to a flat, monotonic sound and lower mid-range.

Pros: Loud and full of bass

Cons: Little subtlety; expensive for available sound quality

Everything Tablet 360° Rotating Case
Full review: tinyurl.com/ntzoo6w ★★★★☆

everythingtablet.co.uk, £29

Everything Tablet's 360° Rotating Case is a highly protective yet lightweight accessory for the iPad Air, and its stand (provided you avoid the rear-most slot in portrait mode) is stable and versatile. The price is okay, too. There are three colours to choose from: cherry red, orange and black.

Pros: Protective; lightweight; clever stand function

Cons: Stand becomes unstable in certain slots in portrait mode

Covert Slim Folio Case
Full review: tinyurl.com/n7m89k3 ★★★★☆

covertaccessories.com, £19

The Slim Folio iPhone 5s case is great value and packs in a lot of useful features without it feeling like overkill. Due to the vibrant and limited colour options, though, it would likely fare best with a younger audience.

Pros: Affordable; stylish; viewing stand; credit card holder

Cons: Card holder is a bit tight; no neutral colour options

Kensington KeyFolio Pro
Full review: tinyurl.com/oc522pm ★★★★☆

kensington.com, £99

The KeyFolio Pro keyboard hits a sweet spot of functionality and weight. We're particularly keen on the removable keyboard that enables the case to function without its additional weight. This works extremely well.

Pros: High quality professional-style case; detachable keyboard; thin and light keyboard with raised chiclet-style keys; keyboard has Function keys; magnetic clasp stand

Cons: Enclosed case for iPad; at 898g it is bulky with the keyboard included; doesn't function well when on your lap

Kensington KeyCover Plus
Full review: tinyurl.com/md57p3h ★★★★☆

kensington.com, From £99

We liked the Kensington KeyCover for iPad Air. It's a lightweight keyboard cover for the iPad Air with a solidly backlit keyboard. We have reservations about the battery life of the device, and you'll need to be careful to keep the backlit keyboard off, and turn off the device when not in use. But it's a small, light and functional option.

Pros: Sturdy protective case; solid plastic keys; easy to type on; good Function keys; backlit key feature

Cons: iPad Air clips in only face down; backlit keys can drain battery

Kujali case for iPad mini
Full review: tinyurl.com/ompg9tv ★★★★★

kujali.com, £29

The Kujali iPad mini case is an all-around winner. It's durable, sleek, functional and affordable. We're excited to see what other tech accessories the Kujali brand will offer in the future.

Pros: Attractive; sturdy; extra protective skin; lifetime warranty

Cons: Just one colour option

Macworld EDITORS' CHOICE

AKG K311

uk.akg.com, £15

★★★☆☆

At £15, it's hard to be too unkind to the AKG K311. They're not the best set of earphones we've heard, though they're not the worst either. And at this price they're the cheapest we've come across for a long time. We'd probably suggest going up to the Apple EarPods at £25, but for £15 this is a good set of headphones.

Full review: tinyurl.com/n3cjhjj

Pros: Extremely cheap; comfortable; sturdy

Cons: Sound quality is markedly average; no iPhone controls

Klipsch Image X10i

klipsch.com, £249

★★★★★

Macworld EDITORS' CHOICE

Klipsch's Image X10i in-ear headphones come with a two-year warranty, which is reassuring when you are spending a whopping £249. But, if you have that sort of money to spend, and you're looking for a good, comfortable pair of in-ear headphones – without caring so much about making calls – then these are a great buy.

Full review: tinyurl.com/qzrfmh3

Pros: Incredibly comfortable; light; good acoustic seal; really clear sound reproduction; you can find them for under £100 on Amazon

Cons: Bling; not great for phone calls

Nocs NS600 Crush

eu.nocs.se, £149

★★★★☆

If you're into dance and electronic music, then these headphones deliver exceptional quality. They're not cheap, though, and if you have a wider taste in music you should probably go for something a little more accurate.

Full review: tinyurl.com/mztrp96

Pros: Powerful bass; stylish design; Kevlar-coated wire; great for dance fans

Cons: Mid-range isn't so hot for traditional rock music

Plantronics Backbeat 903+

plantronics.com/uk, £50

★★★★☆

It can be a bit tricky getting the darn things hooked over your ears, but the light, rugged design of the Backbeats make them a good choice when you're exercising at the gym or out running in the park. The audio quality is also very good, considering the current low price.

Full review: tinyurl.com/pkdayrx

Pros: Affordable; lightweight; good sound quality

Cons: Can be fiddly hooking them over your ears; the maximum volume level isn't very high

Altec Lansing Muzx Ultra mXx606   Full review: tinyurl.com/nr8tra4

alteclansing.com, £80

★★★★★

Macworld EDITORS' CHOICE

These in-ears have a smart-looking remote on the cable and excellent overall sound quality. The sound is rich and warm, with good breadth across the spectrum; the bass feels punchy without overshadowing any of the upper notes.

Pros: Interesting designs; fantastic sound quality across a wide spectrum of musical styles

Cons: Slight artificial feel to some guitar music

Turtle Beach i60

turtlebeach.com, £349

★★★★☆

The asking price seems a bit high and puts these in the same league as Bose and Sennheiser. We'd also expect noise cancellation for this kind of money, but the surround sound quality is superior, and as a result, we suspect that it would take a lot of external noise to distract you.

Full review: tinyurl.com/qawoz9L

Pros: Great selection of audio presets available via iOS app; use Bluetooth and Wi-Fi at the same time

Cons: No noise cancellation; audio levels aren't uniform; high price

Logitech UE 6000

logitech.com/en-gb, £169

★★★★☆

We like these headphones a lot. They combine stunning bass and superb treble audio with nice styling, and the active noise cancellation technology makes them ideal for long journeys. They come with a padded carry case, an audio splitter and a replaceable audio cable, too.

Full review: tinyurl.com/pLfv8bh

Pros: Amazing bass and treble audio; iPhone controls; separate earphone cable; noise-cancellation technology

Cons: Heavy weight; audio not great for rock and vocal music

The House of Marley Buffalo Soldier   Full review: tinyurl.com/L7r9dzy

thehouseofmarley.co.uk, £79

★★★★☆

The Buffalo Soldier headphones are a decent pair of on-ears with good environmental credentials. The audio is on a par with other headphones at this price point, but we were impressed with the fit and finish.

Pros: Great build quality; good audio; solid environmental credentials; it's nice to have tech products made from wood

Cons: The whole Bob Marley branding thing seems a bit strange

Logitech UE 9000

logitech.com/en-gb, £299

★★★★☆

The high price of the Logitech UE 9000 is what's stopping us recommending them outright. If you can find them at a discount in the sub-£200 price range, we'd give them serious consideration for the convenience of the combination of Bluetooth and high-capacity internal battery.

Full review: tinyurl.com/odr6b4b

Pros: Very well constructed; plenty of detail across all frequencies

Cons: Mediocre active noise cancelling; minimal headband padding; high price

Jabra Revo

jabra.co.uk, £187

★★★★☆

Although the Jabra Revo wireless headphones are not exactly cheap, they warrant their price tag thanks to the good looks, features, comfort, durability, wireless performance and overall sound quality. These are a very solid pair of headphones.

Full review: tinyurl.com/nzfghmh

Pros: Stylish appearance; comfortable; durable; impressive audio performance; good battery life; NFC pairing available; touch control panel

Cons: Not cheap

Buyers' Guide

Canon EOS 1200D
Full review: tinyurl.com/oy6m7Ly ★★★★☆

canon.co.uk; £349 (body only), £399 (18-55mm lens)

While the 18Mp EOS 1200D might not offer all the bells and whistles of models higher up the range, such as a tilting and swivelling LCD screen, it's possible to get professional-looking results. As such this is a very affordable route to getting sharper, more obviously 'pro' pictures from the get go.

Pros: Affordable; well built; professional-looking results; easy to operate

Cons: Fixed LCD screen; no built-in wireless connectivity; maximum capture speed is modest

Sony Cyber-shot DSC-RX10
Full review: tinyurl.com/obaywbj ★★★★☆

sony.co.uk, £1,049

Resembling a cross between a digital SLR and a Howitzer cannon, the Sony Cyber-shot RX10 looks like a serious contender for serious photography, although it isn't an inexpensive option, when you add up what a semi-pro DSLR body and a similar zoom would cost, investing in this makes for a sound investment.

Pros: Solid magnesium alloy build; tilting LCD and eye-level viewfinder; impressive zoom; knockout image quality

Cons: High price may limit appeal; big lens means bulky body

Nikon 5300
Full review: tinyurl.com/kbb342p ★★★★☆

nikon.co.uk, £829

For a beginner's camera, the D5300's layout is as busy as a photo enthusiast would want, while it's as speedy to get up and running from cold as we'd expect from a DSLR in this price bracket. More importantly, it's capable of capturing an impressive degree of detail.

Pros: Excellent image quality; tilting LCD screen; built-in digital effects; easy-to-navigate user interface

Cons: Glossy body cheapens look; pricey

Pentax K-3
Full review: tinyurl.com/q8tq23e ★★★★☆

pentax.co.uk, £1,199 (18-55mm lens)

Providing excellent rendition of colours and sharp images, the Pentax K-3 offers slightly more bang for your buck than the Nikon D5300. If you need a lens, the 18-55mm zoom kit is the best bet at £1,199.

Pros: Solid feel; professional-grade body; in-body image stabilisation; switch on or off anti-aliasing filter

Cons: No Wi-Fi connectivity; blocky design

Nikon D610
Full review: tinyurl.com/qcczouz ★★★★☆

nikon.co.uk, £2,299 (24-85mm lens)

Nikon's DSLR comes across as a subtle update of the previous D600 rather than major overhaul. Like its predecessor, the D610 is an affordable route into full-frame photography for anyone wedded to the Nikon brand. You can't fault the images, so this is a purchase where the head wins out over the heart.

Pros: Large full-frame sensor; waterproofed body; workhorse-like build; swift response times; large and bright optical viewfinder

Cons: No integrated Wi-Fi; expensive if you don't need full-frame DSLR; chunky and bulky

Sony A58
Full review: tinyurl.com/ouje6wb ★★★★☆

sony.co.uk, £419 (18-55mm lens)

Sharp and well-saturated images from the camera, as well as ultra-smooth video clips, confirm this cheaper-than-average model as a jack of all trades. So if you don't mind an electronic viewfinder as opposed to the traditional optical version supplied by a regular DSLR, the Sony A58 can be considered a steal.

Pros: Well saturated colours and warm feel to images; rear LCD can be tilted up or down; DSLR-style handling yet quicker to get video recording up and running

Cons: The rear LCD screen is smaller than most rivals (even if it can be tilted)

Pentax K-50
Full review: tinyurl.com/pf5xgkn ★★★★☆

pentax.co.uk, £599 (18-55mm lens)

The Pentax K-50 is so nearly a great camera, but a slightly bland design and lack of adjustable LCD when used as viewfinder let it down. However, if you plan on using this camera in the rain and snow, the semi-pro level of ruggedness makes for a worthy investment.

Pros: Camera body and supplied lens are both weatherproofed, while internal sensor shift shake reduction mechanism means specially image stabilised lenses are not required

Cons: Body design reflects price in being chunky with big buttons and relatively frill free; LCD is fixed rather than angle adjustable

Sony DSC-RX1R
Full review: tinyurl.com/ma6sqxs ★★★★☆

sony.co.uk, £2,599 (35mm lens)

Thanks to a lens aperture range from f/2.0 to f/22 plus a focal distance up to infinity, it's a jack-of-all-trades device, providing lovely shallow-depth-of-field results where a subject's sharp but the background's attractively soft. Superb it may be, but whether the RX1R is worth it depends on the application to which you may wish to put it.

Pros: High-resolution full-frame sensor in a small-ish camera package; high-quality bright aperture lens; built-to-last metal construction suggests a device fashioned for war

Cons: Hard to justify on price alone; no viewfinder built in (accessory viewfinder is pricey, too); short-ish battery life of 200 plus shots

Alpha A580
Full review: tinyurl.com/ndf7qok ★★★★☆

Sony, www.sony.co.uk, £569 (body only) or £649 (including 18-55mm lens)

The A580 has many of the same core features as the smaller A55 for £100 less – including a top whack light sensitivity setting of ISO 12800, although shooting video isn't quite as fluid or intuitive.

Pros: A cheaper alternative to the A55 with identical resolution and many of the same core technologies

Cons: Chunky build

Nikon D7100
Full review: tinyurl.com/o57zqLr ★★★★★

Macworld EDITORS' CHOICE

nikon.co.uk, £1,099

The Nikon D7100 is a new range-topping 24Mp APS-C sensor DSLR for aspirational amateurs. It's a respectable showing, although if extras such as weatherproofing aren't required there are cheaper alternatives delivering a very similar still image quality.

Pros: Weather resistant; high-res backplate LCD; high res sensor; top plate LCD window as shortcut to key settings; compatible with over 60 Nikon lenses; 51 selectable AF points

Cons: Basic image quality no better than most DSLRs costing £500+; non-angle adjustable LCD; common image artefacts such as pixel fringing still present

Fujifilm FinePix S9400W
Full review: tinyurl.com/o423c5w ★★★★☆

fujifilm.eu/uk, £269

While the S9400W may not excel, it's one of the very best options out there in terms of zoom range, build and handling within its lower-priced section of the market, which is why we're happy to give it an above average score.

Pros: Big zoom power offers a wealth of framing opportunities; affordable; good build and handling; manual features alongside the fully automatic

Cons: Small-ish sensor; no rechargeable Lithium-ion battery supplied with this model, small and pokey viewfinder; fixed LCD screen; results no match for the DSLR it resembles

Fujifilm X-E2
Full review: tinyurl.com/k89vvdc ★★★★★

Macworld EDITORS' CHOICE

fujifilm.eu/uk, £1,149 (18-55mm lens)

Improvements over the earlier X-E1 (tinyurl.com/Lk8j3qy) seem to be largely performance based, and come down to enhanced speed and accuracy.

That said, if you're considering spending this amount, then we'd also recommend taking a look at Fujifilm's X-T1 (tinyurl.com/ogstmv6).

Pros: Semi-professional compact system camera with an eye-level viewfinder; rangefinder-like controls; build quality is reminiscent of an even pricier Leica camera

Cons: Pricey if you don't need an eye-level viewfinder; other CSCs are more intuitive to use

Fujifilm X-A1
Full review: tinyurl.com/Lej65yq ★★★★☆

fujifilm.eu/uk, £359 (16-50mm lens)

The X-A1 is Fujifilm's handsome-looking entry-level interchangeable lens X-series compact, a range noted for reviving the critical fortunes of the brand with its classic styling and a feature set more geared to enthusiasts and professionals than the happy-snappy brigade.

Pros: Premium look and feel; swift and accurate autofocus; plenty of effects and Fujifilm's Film Simulation modes provide a point of difference; tilting LCD

Cons: A larger handgrip would have been useful; longer zooms in danger of making the camera feel a tad 'front heavy'; no built-in eye-level viewfinder

Sony A5000
Full review: tinyurl.com/kysrxfy ★★★★☆

sony.co.uk, £419 (16-50mm lens)

It might not look the flashiest on test, but the stripped back Sony A5000 is one of the easiest and most accessible routes to achieving more professional-looking shots for anyone upgrading from a smartphone. It's affordable, too.

Pros: Large 20.1Mp resolution from an equally big APS-C sensor results in detailed shots; tilting LCD screen; built-in flash; fairly priced kit with Power Zoom

Cons: No viewfinder or hotshoe

Panasonic Lumix DMC-GM1
Full review: tinyurl.com/m3jupwp ★★★★☆

panasonic.co.uk, £569 (12-32mm lens)

Pocket-sized if you remove the lens, the GM1 maintains a premium feel thanks to a lightweight yet sturdy aluminium frame and a DSLR-like magnesium-alloy finish. Images are surprisingly detailed, while colours straight out of the camera are engagingly warm.

Pros: Playing card dimensions; sturdy DSLR-strength build provides a premium feel; size hasn't unduly affected handling and the images are a knockout

Cons: So-so battery life; touch-sensitive onscreen icons are small, as are the hard keys on the backplate; lacks an eye-level viewfinder

Olympus OM-D E-M10
Full review: tinyurl.com/ko3dpng ★★★★☆

olympus.co.uk, £699 (14-42mm lens)

Offering 16Mp stills and full-HD video in one compelling package, the Olympus E-M10 is the retro-styled camera for photo enthusiasts who couldn't justify spending a *grand on previous OM-D E-M1 models (see below).

Pros: Classic design provides a premium feel; pop-up flash and Wi-Fi connectivity; tilting LCD screen with high resolution; 1.4-million-dot eye-level finder

Cons: Smaller sensor size than other big-name rivals; nose butts up against LCD screen when using eye-level viewfinder

Canon PowerShot S120
Full review: tinyurl.com/p56qdLc ★★★★☆

canon.co.uk, £449

If you're looking for compact that will ape a digital SLR's quality without sacrificing portability, then the PowerShot S120 is a good choice. Despite its pocket size and slender proportions, it's solidly built. It's also easy to use and the images it produces are rich.

Pros: Solid feel; high-quality construction; touchscreen control; customisable lens ring function will appeal to those who love getting hands-on with camera operation

Cons: For the money, you could buy a cheap DSLR; lacks a handgrip; omits an eye-level viewfinder

Olympus OM-D E-M1
Full review: tinyurl.com/k3e4u6v ★★★★☆

olympus.co.uk, £1,299 (12-50mm lens)

Despite a few reservations, the OM-D E-M1 is right up there at the pinnacle of what a compact interchangeable-lens camera can achieve. For most of us, in comparison with a DSLR, the image and build quality will be more than good enough to prompt a possible switch of allegiance.

Pros: Solid build quality; dust- and waterproofed; in-body image stabilisation; decent image quality

Cons: Small image sensor; buttons feel squashed in

Canon PowerShot G16
Full review: tinyurl.com/oz6ddq8 ★★★★☆

canon.co.uk, £529

Aside from the rock-solid build quality and DSLR-feature set, the pictures are also worth treasuring, with colours beautifully realistic and detail pin-sharp. If you stick under ISO 6400 to avoid an obvious deterioration of fine detail, you'll find this compact hard to beat

Pros: High-end premium shooter; solid set of features; impressive pictures

Cons: Missing tilting rear LCD panel; price a little on the high side

Samsung NX2000
Full review: tinyurl.com/qaqz27b ★★★★★

Macworld EDITORS' CHOICE

samsung.com/uk, £499 (20-50mm lens)

More evolution than revolution, the NX2000 should prove popular with photographers on a budget, who want a better quality of camera for those special occasions, but not the added bulk of a DSLR and larger lenses. For those who already own Galaxy phones and tablets, navigating its menus and icons will feel familiar.

Pros: Good value; large touchscreen; sharply detailed and colour-rich images straight out of the camera with minimal effort; increased connectivity options

Cons: If you do need to remove the media card it's a pain, as the NX2000 has opted for the small and fiddly fingernail-sized microSD; no onboard flash or eye-level viewfinder

Buyers' Guide

AOC Q2770PQU
Full review: tinyurl.com/Lkcejxc
★★★★★
Macworld EDITORS' CHOICE

aoc-europe.com/en, £420

AOC's latest professional display may not be packaged in the finest of chassis, but the Q2770PQU is a high-quality model that's well suited for use with a Mac. It's also the finest quality panel we've tested at this price.

Pros: High 2560x1440 resolution; superb image quality; telescopic, rotating stand; low power consumption
Cons: Bland styling

NEC MultiSync E243WMi
Full review: tinyurl.com/kncgvou
★★★★☆

necdisplay.com, £200

The NEC MultiSync E243WMi could prove ideal as a high-quality monitor that you can run all day without adding much to your electricity bills. Specified at just 13W, this monitor ought to prove cost-effective over time. The display is neat and accurate, well-built and functional.

Pros: Nicely built; fully adjustable stand; excellent overall colour accuracy; well rendered text; good screen uniformity; decent sRGB coverage; Eco modes and low power use
Cons: Menu system poorly implemented; more expensive than budget consumer designs

Philips 234E5QHAWL
Full review: tinyurl.com/o2ggrv8
★★★★☆

philips.co.uk, £130

The Philips 234E5QHAW is a good-value IPS panel at the popular 23in size. It should have reasonable luminance consistency and good colour coverage and accuracy. There's some penny-pinching on the frame and the stand is weak, but this monitor offers good quality and modestly stylish looks.

Pros: Cheap; AH-IPS; good-quality display; great viewing angles; easy-to-use menu controls; nice looks; HDMI and MHL connectivity; speakers; ultra-thin bezel
Cons: Not 100 percent sRGB coverage; poor stand; average build quality average; not a lot of interfaces

AOC i2769Vm
Full review: tinyurl.com/Ldtanwc
★★★☆☆

aoc-europe.com/en, £200

While the build quality is average, reflecting where the costs have been saved, it's not bad to look at and, while it wouldn't take a lot of punishment, it isn't particularly flimsy. Throw in the excellent colour uniformity and consistency, and you have a decent, large-screen, budget 27in IPS option.

Pros: Large screen for £200; IPS panel; wide viewing angles; good colour consistency; configuration options
Cons: Mediocre build quality; awkward menu system; more luminance variation than most IPS panels

Samsung S24C650PL
Full review: tinyurl.com/pkLazjr
★★★★☆

samsung.com/uk, £170

Although Samsung's bland-looking 24in PLS screen offers excellent colour accuracy and consistency, it's let down by light leak and inconsistency in luminosity. For general use, the viewing angles make it a good screen to demonstrate ideas to a group, but for designers and photographer there are better options.

Pros: Very good colour consistency and accuracy; 5ms refresh rate; telescopic stand; rotates and swivels; USB hub in base
Cons: Light leak all along the bottom of the screen; awful luminance consistency; bland looks; not 100 percent sRGB; weak and tinny speakers

NEC MultiSync EA273WMi
Full review: tinyurl.com/n6yahxr
★★★★☆

nec-display-solutions.co.uk, £285

The relatively low resolution for the size and the mid-range price tag mark it out as a solid performer. For standard office duties where the power-saving features can come into play, it's a decent quality display that will serve well.

Pros: Good viewing angles; excellent colour uniformity; plenty of contrast; solid build quality; display rotates; eco power saving features; lots of interfaces
Cons: Middle of display brighter than everywhere else; boxy design; relatively low resolution for the size; impossible to see menu controls in dark rooms

Asus PQ321QE
Full review: tinyurl.com/k2rLs8a
★★★★☆

asus.com/uk, £2,999

Amazing detail on the screen makes it ideal for all manner of applications where you need detail rather than speed. The quality of the screen is commendable making this a great purchase for those editing 4K video or needing as much detail as possible.

Pros: Fantastic resolution delivers incredible detail; excellent colour accuracy; puts out a large amount of light; good contrast; stand swivels; monitor tilts
Cons: Expensive; requires high-end graphics to produce 60Hz mode; only a single DisplayPort interface; colour gamut is some way off sRGB

Samsung S27B971D
Full review: tinyurl.com/pwc4yph
★★★★☆

samsung.com/uk, £850

Although the price is a little high, you can't argue with the build quality or colour consistency and accuracy as these are excellent. For photographers and designers who want something stylish and don't mind paying for it, there's lots of screen space to enjoy.

Pros: Great build quality; stylish looks; touch-sensitive menu controls; high 2560x1440 resolution; lots of screen space at 27in; bundled leads; excellent colour accuracy
Cons: Expensive; contrast and brightness aren't anything to write home about; stand doesn't offer much flexibility

Hanns.G HW246HBB
Full review: tinyurl.com/Lrt48o3
★★★★★
Macworld EDITORS' CHOICE

www.hannsg.com/eu/en, £117

For general Mac use, this is a good purchase, offering stylish looks, lots of screen space and good contrast ratio. The colour uniformity and accuracy are both commendable and only the lack of complete sRGB coverage and the uneven luminocity are drawbacks. Otherwise, this is a lightweight and well priced panel.

Pros: Lightweight; plenty of screen space; stylish two-tone looks; good value; great colour accuracy and good uniformity; plenty of contrast
Cons: Stand is fairly insubstantial; average brightness; two areas of wildly differing brightness; limited interfaces; mediocre sRGB coverage

BenQ GW2760HS
Full review: tinyurl.com/nf3wvfy
★★★★★
Macworld EDITORS' CHOICE

benq.co.uk, £210

This is a superb monitor to choose to go with a Mac mini or as an external display for your MacBook Air or MacBook Pro. At around £200, it offers premium quality and high performance at a price normally associated with a much lower-quality display.

Pros: Large 27in display; flicker-free technology; non-glossy AG matte coating; fantastic colour gamut range; unobtrusive bezel; amazingly low price
Cons: Resolution not as high as Apple Cinema Display; colour accuracy isn't as good as a high-end monitor

iFi nano iDSD

Full review: tinyurl.com/nfrwsgd

★★★★★

ifi-audio.com, £165

The iFi nano iDSD serves as a great upgrade to the headphone sound of MacBooks, iPhones and iPads. It's superbly made and brings a major upgrade to CD-level sound, as well as open up the many possibilities for real high-resolution music that are now available from computers and mobile devices.

Pros: High-resolution audio playback; relatively low cost; great build quality

Cons: A zipping noise is just audible when changing volume while music is playing

Elgato Thunderbolt Dock

Full review: tinyurl.com/qzjufge

★★★★☆

elgato.com/uk, £189

We've tried all four of the Thunderbolt docks currently available on the market, and found that Elgato's just nudges ahead in build quality and style. And while it seems to be based on exactly the same reference design used by CalDigit and StarTech, Elgato's offering lets you charge your iPad.

Pros: Three USB 3.0 ports; gigabit ethernet and HDMI 1.4 available for any Mac with Thunderbolt; added iPad charge capability with software kext

Cons: Limited audio quality; no FireWire

Asus USB-AC56

Full review: tinyurl.com/n3dm7kq

★★★★★

asus.com/uk, £60

The Asus USB-AC56 is an effective upgrade that can bring faster wireless networking to your Mac. You'll need a USB 3.0 port for best results, but under the right conditions you may get close to half-gigabit wireless transfers at short range, and the benefit of increased performance at longer ranges, too.

Pros: Upgrades Wi-Fi to 11ac; fast real-world speed; increased range

Cons: Bulky add-on; rudimentary software

StarTech Thunderbolt Station

Full review: tinyurl.com/o98xwd6

★★★★☆

uk.startech.com, £230

If you need to expand your port count or just make it quicker and easier to interface a MacBook with your home/office setup each day, then the StarTech Thunderbolt Station will serve you well.

Pros: HDMI output; three USB 3.0; relatively inexpensive; cable included

Cons: HDMI limited to full-HD; USB 3.0 working slowly; won't charge iPad

View Quest Hepburn

Full review: tinyurl.com/ku9bvnw

★★★★☆

viewquest.co.uk, £149

Overall, we'd suggest that the View Quest Hepburn speaker is ideal for anyone with a love of vintage or retro-style, as it'll sit nicely in a living room or kitchen and provide satisfactory sound that will suit a dinner party, barbeque or general background music for a day bustling around the house.

Pros: Gorgeous vintage design with multiple colour options; Bluetooth speaker & DAB radio combination; easy to use and simple setup

Cons: Some distortion at highest volume; no rechargeable battery; high price tag considering the sound quality

Pure Evoke D2

Full review: tinyurl.com/ohnrvoa

★★★★☆

pure.com, £99

The Pure Evoke D2 packs great audio quality for the size. The combination of digital radio and Bluetooth ensure it has a lot of functions. Its small stature will keep it from being your main speaker, but it makes a great digital radio with iPhone or iPad connectivity for the kitchen or bedroom. It offers a lot of functionality for the price.

Pros: Small footprint; good audio clarity; Bluetooth connection; easy to set up

Cons: Separate Pure ChargePAK required to use portable battery; small size limits volume

CalDigit Thunderbolt Station

Full review: tinyurl.com/kdhyLdn

★★★★★

caldigit.com, £179

The CalDigit Thunderbolt station is a useful addition for anyone who needs up to three USB 3.0 ports, or a quick way to connect all their peripherals. Improved audio quality and consistent HDMI operation would make this product stand out from the crowd.

Pros: USB 3.0; gigabit ethernet and HDMI 1.4 available to any Mac with Thunderbolt; convenient

Cons: Poor audio quality; erratic HDMI issues; no FireWire; low bus power on USB ports

Elagato EyeTV Netstream 4Sat

Full review: tinyurl.com/qemoawc

★★★★★

elgato.com/uk, £259

If you have a satellite dish, or can accommodate one and wish to dovetail your media with your computer network, then Elgato's Netstream 4Sat is a delight. Performance, styling and build quality are first-class, and being able to record four different HDTV channels is worth every penny of the asking price.

Pros: Four satellite tuners in one box; great build quality; smart software

Cons: Cumbersome channel editing for iPhone/iPad; unable to update firmware on a Mac

IK Multimedia iRig Pro

Full review: tinyurl.com/nu4dx6w

★★★★☆

ikmultimedia.com, £120

As an all-in-one unit for connecting your live instruments to a DAW, the iRig Pro is very easy to recommend. IK Multimedia has thought carefully about the needs of musicians and built something simple to use that produces great results. It might be small in size, but it packs a seriously impressive punch.

Pros: Easy to use; no discernible latency; excellent sound quality

Cons: Gain dial is a little fiddly to adjust; no headphone out

Focusrite iTrack Solo

Full review: tinyurl.com/ozfszdx

★★★★☆

uk.focusrite.com, £129

in essence, the iTrack Solo does the one thing you ask of any recording device, it simply gets out of the way and lets you make music without any fuss. Focusrite also includes a code for its Scarlett plug-in suite and Ableton Live Lite 8 in the box, which makes an already excellent package even better value for money.

Pros: Excellent audio quality and a simple setup with the iPad

Cons: The Device Link cable feels frail and awkwardly short

Buyers' Guide

HP Colour LaserJet Pro M177fw
Full review: tinyurl.com/Lzzgbpf ★★★☆☆

hp.com/uk, £274

The £274 price tag represents good value for money, as the LaserJet Pro provides excellent print quality and useful connectivity features. However, running costs for both colour- and mono printing are above average, which means that it can be recommended only for small businesses that need laser-quality on an occasional basis.

Pros: Excellent print quality; ethernet; Wi-Fi and AirPrint connectivity

Cons: Slow colour printing; very expensive toner cartridges

Samsung M2070W
Full review: tinyurl.com/nnhmt6k ★★★☆☆

samsung.com/uk, £129

The M2070W is a neatly designed and versatile laser printer that will appeal to home workers and small businesses that need a fast, high-quality mono printer for letters and other business documents. However, the relatively low capacity of Samsung's toner cartridges means that running costs are above average.

Pros: Initial purchase price; built-in Wi-Fi; iOS app for Apple mobile devices

Cons: Expensive toner cartridges; no ethernet or automatic duplex printing

Dell C1765nf
Full review: tinyurl.com/no2evbb ★★★☆☆

dell.co.uk, £189

It's not often that we recommend Dell hardware to our readers. However, there aren't many colour laser printers available for £200 or less, so the Dell C7165nf is a good option for home workers or small businesses that need an affordable workhorse printer.

Pros: Fast, affordable laser printer; 30,000ppm duty cycle; iOS and Android apps; USB and ethernet

Cons: No Wi-Fi; modest capacity; colour printing is expensive

Epson AcuLaser C3900DN
Full review: tinyurl.com/L8Lxjk7 ★★★★★

Macworld EDITORS' CHOICE

epson.co.uk, £400

It might be overkill for many small businesses – especially the self-employed people who work from home – but the C3900DN will earn its keep if you need a fast printer that can handle fairly high volumes of work with competitive running costs.

Pros: Fast; good print colour for mono and colour; competitive running costs

Cons: Initial purchase price of toners is very high

Kyocera FS-C5150DN
Full review: tinyurl.com/mun9sa6 ★★★★★

Macworld EDITORS' CHOICE

kyocera.co.uk, £240

If you need to print lots of colour documents every day, then the FS-C5150DN may not be fast enough for you. However, its competitive running costs ensure it's still a good choice for any business needing a high-quality printer.

Pros: Low purchase price; competitively priced toner cartridges

Cons: No Wi-Fi or AirPrint; colour printing is relatively slow

Canon Pixma iP2850
Full review: tinyurl.com/nwvxLw7 ★★☆☆☆

canon.co.uk, £40

The low cost of the iP2850 is certainly attractive, so it's bound to appeal to home users and students who need a basic, affordable printer. Print quality is also very good for such a low-cost device, but the high cost of the black ink cartridge outweighs any savings you might make on the printer's initial purchase price.

Pros: Inexpensive to buy; pigmented black ink produces very good mono text

Cons: Black ink cartridges are very expensive; no Wi-Fi; Mac support could be improved

HP OfficeJet 4630
Full review: tinyurl.com/p9hLgme ★★★☆☆

hp.com/uk, £89

The purchase price of the OfficeJet is hard to beat, especially as it includes two-sided printing, a document feeder and AirPrint connectivity for under £100. Print quality and speeds are also respectable for such an affordable printer. Unfortunately, printing costs are higher than we'd like – especially for mono printing.

Pros: Initial purchase price is very competitive; built-in Wi-Fi and AirPrint; fax and document feeder

Cons: Expensive ink cartridges; no ethernet interface

Epson Expression Home XP-412
Full review: tinyurl.com/n3g7kLq ★★★★☆

epson.co.uk, £89

The Expression Home XP-412 could certainly be faster, and lacks a few useful options such as duplex printing. However, it's a compact and affordable printer that provides good quality and reasonable running costs. It's a good option for home users who need to print only occasional documents or photos.

Pros: Affordable inkjet printer; supports Wi-Fi and AirPrint; good text and graphics output

Cons: Slow; no duplex printing

Epson Expression Premium XP-610
Full review: tinyurl.com/kd5mvvq ★★★★☆

epson.co.uk, £149

The Expression Premium XP-610 crams a lot into its neat and compact design. Text output is excellent, with smooth, clean text outlines, and the photo-black ink adds contrast to photo output, producing crisp, bold colours. It's fast, too, for such a compact printer, turning out 11ppm for text, and 8ppm for colour.

Pros: Compact and affordable multifunction printer for home users; supports Apple AirPrint; duplex printing and AirPrint for iOS

Cons: No ethernet; modest capacity; cost for text printing is a little high

HP OfficeJet 7610
Full review: tinyurl.com/q96qdkg ★★★★☆

hp.com/uk, £200

It's good to see a printer that provides an affordable A3 printing option, and the only real disadvantage with the OfficeJet 7610 is that it's pretty bulky. However, it produces very good results, with bright, strong colours and crisp smooth text that comes close to laser quality.

Pros: Versatile A3/A4 printer; includes scanner, copier and fax; supports Apple AirPrint

Cons: Big and bulky; duplex printing is an optional extra

CalDigit T3

Full review: tinyurl.com/lvrsolq

★★★★☆

caldigit.com; £586, 6TB

The CalDigit T3 is a versatile desktop RAID system that makes good use of original Thunderbolt speeds with its preinstalled hard disks. It offers greater capacity than systems that rely on 2.5in drives, and reasonable value in capacity per pound at under 10p per gigabyte.

Pros: Large capacity from three RAIDed disks; sturdy build; relatively quiet in operation

Cons: Slower at random file access; no data security in RAID 0

LaCie Little Big Disk Thunderbolt 2   Full review: tinyurl.com/kpkzf79

★★★★★

Macworld
EDITORS' CHOICE

lacie.com/uk, £1,000

It may not be bus-powered, but the cute Little Big Disk 2 can certainly be toted when required. Not only compact and blissfully quiet in use, it's also the fastest storage drive of any persuasion, albeit at the higher price bracket at exactly £1 per gigabyte. But if you need super-speed storage up to 1000GB there's none better.

Pros: Compact; stylish and quiet; supremely quick

Cons: Not cheap at £1/GB; still requires mains power

Promise Technology Pegasus2 R6   Full review: tinyurl.com/Ldda3u8

★★★★☆

promise.com £2,499, 18TB

As much as the blistering speed available from a tightly knitted collection of fast hard disks, the Promise Pegasus2 R6 impresses with its cool and confident character. That, and the attention that's gone into support of the whole drive through its advanced management software utility.

Pros: Huge 18TB capacity; SSD-like speeds; comprehensive software management

Cons: Unique capacity/speed combination doesn't come cheap

WD My Passport Pro

Full review: tinyurl.com/ke53fap

★★★★★

Macworld
EDITORS' CHOICE

wdc.com/en, £239, 2TB; £349, 4TB

Portable drives generally trade performance for portability, but the My PassPort manages to provide desktop-levels of performance wrapped up in a portable design. It's also competitively priced when compared with other Raid drives, making it a great choice for professional users who need a fast, portable backup device.

Pros: High-performance and high-capacity; Thunderbolt interface; supports Raid 0; Raid 1; JBOD

Cons: Bigger and heavier than a conventional portable drive; no USB interface

Synology DS1513+

Full review: tinyurl.com/qbf3w4y

★★★★★

Macworld
EDITORS' CHOICE

synology.com, £630

While the new DSM 5.0 software interface falls victim to the opinion-dividing Windows 8 look, the performance and feature set of this Synology NAS drive lift it clear of all competitors. Its performance in serving files is second to none, which lets it earn its keep.

Pros: Fast; easy-to-learn interface

Cons: Windows 8-like software interface; pricey

Toshiba STOR.E Slim

Full review: tinyurl.com/khqfnqb

★★★★☆

toshiba.co.uk; £65

The Toshiba STOR.E Slim for Mac is relatively tough and affordable. It's generously sized internally at 1000GB, while modestly sized externally, taking very little space in your bag or pocket. Performance is as good as any notebook hard disk.

Pros: Large capacity; attractive price; relatively quiet

Cons: Slow

Freecom Mobile Thunderbolt/USB 3.0 Drivemg   Full review: tinyurl.com/nluk7b2

★★★★☆

freecom.com; £179

If you're looking for an unfussy, lightweight portable drive to connect by Thunderbolt or USB 3.0, the Freecom Mobile Drive mg is one smart solution to look out for. It's available in 1TB or 500GB capacities using disk technology and offers a better balance of capacity against price compared to flash drives.

Pros: Slim; lightweight design; relatively tough magnesium construction; high capacities at cheaper prices than flash storage

Cons: Inevitably slower speed than flash; mechanical drives less resilient

Sony HD-SG5

Full review: tinyurl.com/pubdtnf

★★★★☆

sony.co.uk, £75

If performance is your main priority, then there are faster Thunderbolt and SSD drives. However, the slimline design of the SG5 is both attractive and practical, and it'll be a particularly good choice for owners of the MacBook Air who want a portable backup drive that they can carry around with them.

Pros: Slimline design; weighs just 130g; USB 3.0

Cons: Modest performance; no Thunderbolt

Seagate Central

Full review: tinyurl.com/Lf3x47a

★★★★☆

seagate.com/gb/en, £100

Most of Seagate's NAS drives are aimed at business users, but the Seagate Central drive is designed for use in the home. There's nothing innovative about this drive, but it gets the basics right. It's competitively priced and easy to use, if very slow when writing files to disk.

Pros: Attractively priced; easy to use; good support for Mac and iOS devices

Cons: Very slow for copying files; no Raid protection of data

Western Digital My Cloud

Full review: tinyurl.com/pnqmn9k

★★★★☆

wdc.com/en, £120 (2TB)

To make a home hardware-based personal cloud, the device and software must be easy to set up and use, and be completely reliable. With the My Cloud, Western Digital has made that setup straightforward, even if the need for separate device and WD server accounts is asking for trouble.

Pros: Relatively quiet; clear and approachable web admin interface; smart iOS apps

Cons: Slow write speeds; Java requirement for Mac remote access; problems in setting up remote access; security issues with US-based DDNS

Buyers' Guide

Adobe Premiere Elements 12
Full review: tinyurl.com/pygte69 ★★★★★

Macworld EDITORS' CHOICE

adobe.com/uk, £78, £63 (upgrade)

If you're a home movie buff who wants to use titles and other effects to create more professional results, then Premiere Elements 12 will provide all the editing tools you need at an attractive price. Its new Guided Edit mode also makes it a great option for beginners who want to learn more advanced editing techniques.

Pros: Powerful video-editing tools at a competitive price; Guided Edit mode provides help for new users

Cons: Requires fast processor and plenty of memory to edit HD video

QuarkXPress 10
Full review: tinyurl.com/oz7fha9 ★★★★☆

quark.co.uk, £959, £359 (upgrade)

If you're a QuarkXPress 8 or 9 user, there are plenty of reasons to upgrade. (If you've got an earlier version, you'll have to pay the full price). And anyone unhappy with Adobe's switch to a rental-only model for Creative Cloud will appreciate the fact you can still buy or upgrade QuarkXPress 10 outright.

Pros: New user interface; improved image displays; new tools; Cocoa code

Cons: Expensive; loss of some familiar menus

Smith Micro Manga Studio 5 EX
Full review: tinyurl.com/psadd3s ★★★★☆

manga.smithmicro.com, $210 (£130)

Whether you opt for Manga Studio 5 or 5 EX, you're getting a worthy upgrade to 4 EX that isn't just a powerful tool for creating comic book art – but, as many artists are proving, is powerful for creating amazing digital art in general.

Pros: Excellent performance; updated brush engine; layer modes; multiple file handling; custom brush creation; new user interface; EX4 page and story file importing

Cons: Only two features differentiate between the cheaper standard version and the EX version

Maxon Cinema 4D R15
Full review: tinyurl.com/nprhhdu ★★★★☆

maxon.net; Prime £720, Broadcast £1,380, Studio £3,120, upgrade from £276

Overall this release adds stability and refinements, as well as more flexibility and power — especially on the rendering side. Most of the updates seem to have been well thought-out, and definitely build on what was already a very solid package.

Pros: Ease of use; new Team Render; newly developed Irradiance Cache; updated Bevel tool; Intel Embree in physical renderer; extremely stable

Cons: Hoped for more updates to modeling workflow; no updates to BodyPaint 3D; no updates to UV editing

Autodesk Mudbox 2014
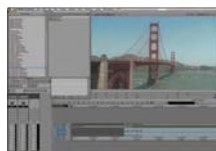Full review: tinyurl.com/o3mmgt4 ★★★☆☆

autodesk.co.uk, £840, upgrade £588

Regardless of any retopology issues, Mudbox remains a great choice for producing digital sculptures and is unmatched in 2D/3D texture painting. However, since the main new features in Mudbox 2014 are for retopology – and they're not up to par with those found in the competition, it's difficult to recommend the 2014 upgrade.

Pros: Top-notch 3D sculpting and 2D/3D painting workflows; shallow learning curve

Cons: Retopologising imported or scanned models requires that models be prepped prior to retopology

Avid Media Composer 7
Full review: tinyurl.com/kjg3hst ★★★★☆

avid.com/uk, £862, £262 (upgrade)

Most of the changes with Media Composer 7 are performance related rather than adding killer new features. Existing Avid customers will love these changes as they speed up the workflow significantly, but if you're not already committed to Media Composer then this probably won't convince you.

Pros: Ability to dynamically extract resolution from hi-res sources; more audio options; cheapest version yet

Cons: Relies on keyboard shortcuts; stereo workflow requires 16GB RAM; spanning markers are clunky; window system can be messy

Adobe InDesign CC
Full review: tinyurl.com/m3gvmqo ★★★★☆

adobe.com/uk, £17 per month single-app plan, £37 a month for teams

InDesign CC contains very few new features – from a user's perspective this isn't a major upgrade. However, if your work involves creating ePub books, you'll want it just for the improvements to ePub formatting. Numerous enhancements to the font menus make choosing fonts much more efficient and flexible.

Pros: Retina display support; font menu and ePub improvements; QR code generator

Cons: Meagre new features

Adobe Edge CC
Full review: tinyurl.com/kw7po7t ★★★★☆

adobe.com/uk, £17 per month single-app plan, £37 a month for teams

Unless you require the animation features of Edge Animate, we would find the price hard to justify. For more experienced teams, we're not sure how useful are these tools when simpler tools may suffice. However, if you're already a Creative Cloud member and heavily wedded to Adobe's app ecosystem, they may prove more useful.

Pros: Tight integration with other Creative Cloud applications; preview design and code easily on iOS and Android devices; use web fonts on your desktop

Cons: Applications lack native UI and share an inconsistent design; preview functions limited to Chrome browser; applications not available to purchase separately

Adobe Illustrator CC
Full review: tinyurl.com/kcuu7uv ★★★★☆

Adobe, adobe.com/uk, £17 per month single-app plan

Illustrator CC introduces three new features that will be a useful addition to every designers toolkit. The first of these is the Touch Type tool, which lets you individually edit each letter. Secondly, you can now have a brush made up of a raster image. And finally, there's the Kuler online palette generation tool.

Pros: Smarter workspace appearance; extensive resources; Kuler iPhone app interaction; improved type control

Cons: Commitment to CC, uninspiring bitmap image strokes

Adobe Dreamweaver CC
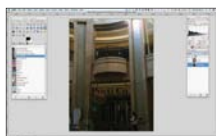Full review: tinyurl.com/ny34xej ★★★★☆

Adobe, adobe.com/uk, £17 per month single-app plan

For those wedded to Dreamweaver, upgrading is a no-brainer, even if there's hardly a glut of new features. It's also a powerful tool for working on sites created with the program itself, as you'd expect. For those who've abandoned Dreamweaver, there's little reason to return. For newcomers, it's a decent product.

Pros: Edge Web Fonts integration; user-friendly responsive site workflow; great CSS Designer panel

Cons: Default responsive layout is dated; still a weighty – and sometimes sluggish – app; 'Adobe OS' UI can be fiddly

GIMP 2.8.10
gimp.org, Free

Full review: tinyurl.com/k7wnsux ★★★☆☆

When using GIMP, you soon realise just what the little paid-for productivity touches are worth in other applications. There are interface niggles and it's also slow at times. However, it's free, so giving it a trial should be a no-brainer. You've got nothing to lose but time.

Pros: Free; constantly updated; OS X Mavericks support; many useful and some unique tools; new cage transform; rotatable brushes; layer groups and improved text tool

Cons: Slow operation; clunky dialogs; proprietary file format; no file management/image organisation

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CyberLink PhotoDirector Ultra 5
cyberlink.com, £79

Full review: tinyurl.com/p4em2fq ★★★★☆

Still keeping focus on organisational tasks, the 64-bit PhotoDirector also gains strength in the image-processing and correction areas with this release. Features such as HiDPI support, HDR Bracketing, Split Toning and Channel Curves are welcome, as is automatic stacking in the Photo Browser.

Pros: HiDPI and 64-bit support; RGB channel curve adjustments; auto-stack groups of shots; bracketed HDR; output to 4K video slideshow

Cons: No .PSD support; lens profiles database needs more expansion; automatic stacking a bit hit-and-miss

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Pixelmator 3.0 FX
pixelmator.com, £20

Full review: tinyurl.com/naztkjL ★★★★☆

Pixelmator feels bit like a cross between Photoshop, Motion and QuarkXPress – although there's no CMYK support for print workflows. It would be nice if filters could be applied as live or 'smart' effects, but the power and variety on offer here is welcome.

Pros: Good value; rewritten for OS X Mavericks; new Layer Styles and Effects; liquify tools; versatile; Retina display support; GPU acceleration via Core Image

Cons: No photo management/cataloguing; smart effects would be a bonus; lack of cross platform support might bother some; App Store download only

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Corel AfterShot Pro
corel.com, £80

Full review: tinyurl.com/ouay3y7 ★★★☆☆

Decently priced and powerful, there's a lot to like about AfterShot Pro. The lack of some tools is a downside, but you can assign an external editor in the Preferences for fine detail work. This is a fast and powerful Raw tool, with strong colour correction, while using Layers and Regions is good for selectively sorting portions of a photo.

Pros: Speedy Raw workflow; Layers and Regions adjustments; Adjustment presets; third-party plug-ins support; GPU hardware acceleration

Cons: No .PSD support; relatively low number of tools; not the most powerful cataloguing workflow; no Retina display support

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Alien Skin Exposure 5
alienskin.com, $149 (£89)

Full review: tinyurl.com/kL5tcxL ★★★★★

Macworld EDITORS' CHOICE

While this isn't a radical update in terms of the number of effects you are getting, the interface change so that far more grunge and grime effects can be applied at once is very welcome. It's also still the best film- and retro effect plug-in money can buy.

Pros: New Polaroid film emulation; new lighting effects; redesigned interface; changes to some of the presets; save own combinations; grunge-orientated effects more flexible

Cons: Not enough new effects; can only flip effects not rotate them; previews are split screen with no side-by-side option

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PicSketch
softease.biz, £2.99

Full review: tinyurl.com/n5mv36z ★★★☆☆

PicSketch produces some good effects, but making the surrounding scribbling part of a separate mode that doesn't even turn the photo into a sketch is a little stupid. It's cheap, but the sketch styles get repetitive too quickly, making this app one for the occasional conversion rather than if you need to do it all the time.

Pros: Cheap; good results easily attainable; various paper backgrounds; some preset sketch effects; blending and colouring options

Cons: Control for brush size is a blunt instrument; surround scribblings in a separate mode; Preset mode doesn't turn photo into a sketch; not enough control over process

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Adobe Photoshop Elements 12
adobe.com/uk, £78, £65 (upgrade)

Full review: tinyurl.com/kLbb49o ★★★★☆

While the user interface could use some tweaking to make it more intuitive, this has many useful photo-editing and organising tools for hobbyists who don't want to fork out for the professional version of Photoshop. We'd suggest looking into cheaper alternatives such as iPhoto or Aperture before purchasing Elements, though.

Pros: Effects, textures and frames add fun ways to edit photos; new features such as Content-Aware Move and Pet Eye are frequently useful

Cons: Some textures, frames and Guided Edits are gimmicky; interface is clumsy and unintuitive; Revel feature costly if more than 50 photos are required

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Corel Painter X3
corel.com/uk, £315, £158 (upgrade)

Full review: tinyurl.com/nkd2bmd ★★★★☆

If you're looking to upgrade from a previous version, there are some pretty enticing improvements to X3 that may well make it worth your while, but like all upgrades, it's whether you feel that the additions will be of use to your own creative process.

Pros: Intuitive improvements; affordable

Cons: Steep learning curve

Adobe Photoshop CC
adobe.com/uk, £17 per month single-app plan

Full review: tinyurl.com/Lo9Leu9 ★★★★☆

This release has plenty for you to get your teeth into. There's something for everyone, but the real star is the Camera Shake Reduction filter. The improvements to the 3D engine are also notable. As it is, this is a decent release with usable functions rather than unnecessary bloat.

Pros: Camera shake filter; 3D performance increased; Spot Removal in Camera Raw excellent; upsampling is better than CS6; vector objects with corners can be re-edited

Cons: Smart Sharpen not massively better; upsampling not as good as third-party plug-ins; limited 3D-format support; numerous windows use old colour scheme

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Adobe Lightroom 5
adobe.com/uk, £57 or from £17 per month for Creative Cloud subscription

Full review: tinyurl.com/Ljcwse2 ★★★★☆

Busy photographers may view Lightroom 5 as the release that enables them to let go of Photoshop for most tasks. New features keep coming and propel Lightroom ahead of Apple's Aperture. The fact you don't have to subscribe to own your copy is also good.

Pros: Lots of ways to sort images; build catalogues; creative presets; Healing Brush good for simple areas; considerable control over exposure; retrograde geotagging

Cons: Library getting overly complex; some bugs; Upright tool well hidden; Advanced Healing Brush not called that in the app

Buyers' Guide

Nuance Dragon Dictate
Full review: tinyurl.com/mfwrcwg ★★★★☆

nuance.co.uk; £125 (£65 upgrade)

Although OS X includes voice-command software, Nuance Dragon Dictate for Mac 4 is a far more mature product. The speech recognition is excellent and the addition of the transcription feature could prove invaluable to students and those who need to write up speeches or presentations.

Pros: Excellent speech recognition; new multiple-profile transcription mode and Gmail integration

Cons: Browser control a little lacking; no punctuation in transcription mode

Draft
Full review: tinyurl.com/k5cvwua ★★★★★ **Macworld** EDITORS' CHOICE

draftin.com; Free, $3.99 (£2.40) per month, $39.99 (£24.40) per year

Drafts is currently free to use as the developer, Nathan Knotny, improves and adds features. Note that it's all the work of just one guy. You're encouraged to subscribe to keep the project going – and we think it's worth it.

Pros: Collaborative document editing; strong version control

Cons: A little slow when switching between views or importing

SimpleTax
Full review: tinyurl.com/n6pudsf ★★★★★ **Macworld** EDITORS' CHOICE

gosimpletax.com, Free

SimpleTax is a great service for those with straightforward tax affairs but who lack the confidence to do their own calculations. Accountancy fees can be an unwelcome expense, but this does a similar job – and for free. Best of all, it demystifies the whole process, showing in simple terms what you can and can't claim for.

Pros: Free; import data from your own sources; calculations performed for you

Cons: You'll need to have all your tax details to hand before you start

FileMaker Pro 13
Full review: tinyurl.com/nwsp3hc ★★★★★ **Macworld** EDITORS' CHOICE

filemaker.co.uk, £286

If you're already a FileMaker user, the upgrade shouldn't take much thinking about. This version builds significantly on the offering you already have – especially if you need to deploy to mobile devices. And if you're looking for a database-building tool for the first time, FileMaker Pro 13 has many attractions.

Pros: Fast database design with Starter Solutions; styles and templates; deployment to web and mobile devices

Cons: Additional costs build up for web deployment
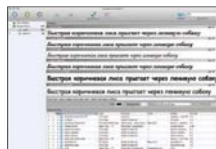
Extensis Suitcase Fusion 5
Full review: tinyurl.com/Lpwyxgp ★★★★☆

extensis.com; £84, upgrade £42

The latest upgrade to Extensis' font-management system doesn't give you as many new features as did v.4 but, as designers adopt Creative Cloud, Suitcase Fusion users will inevitably need the new plug-ins. The QuickComp feature is attractive and works well if you're doing initial concept work.

Pros: Adobe CC in-app support, QuickComp template previewing, tweaked user interface

Cons: No support for Adobe Typekit

NoteSuite 1.0
Full review: tinyurl.com/px4wrd3 ★★★★☆

notesuite.io, £2.99

NoteSuite is a good note-taking app, even if it can't outgun rivals such as Evernote. However, its outstanding feature is the smooth iCloud synching, which will definitely appeal to anyone that uses an iPad or multiple Macs.

Pros: Affordable, versatile tools for organising notes and to-do lists; automatic iCloud synching; works on Mac and iPad

Cons: No iPhone version; fewer features than the iPad version

TopXNotes
Full review: tinyurl.com/q9kh4xk ★★★★☆

tropic4.com, £27

TopXNotes's price is pretty steep, but it's clear its features were designed for those who take seriously the task of keeping notes. If you fall within this audience, the app does its job capably and efficiently, with an impressive array of features and a user interface that's well thought out and provides an excellent user experience.

Pros: Plenty of functionality at your fingertips; effortless search features; helpful MultiView for perusing multiple documents

Cons: MultiView windows don't resize properly

Scapple for OS X
Full review: tinyurl.com/oo6vv93 ★★★★☆

literatureandlatte.com, £10

If you are prepared to embrace thinking visually, Scrapple is a useful tool that could turn small ideas into big ones without too many headaches. Equally, it's a handy way of collecting scraps of ideas that may not come to anything, but make more sense when seen together.

Pros: Drag-and-drop simplicity; freeform note making; Scrivener integration; ability to easily export notes for sharing and printing; iCloud support; MathType support; inexpensive

Cons: Users need to start mapping ideas visually and regularly; some features including iCloud support dependent on OS X

SiteMaker Moonfruit Standard
Full review: tinyurl.com/ndfemre ★★★★★ **Macworld** EDITORS' CHOICE

moonfruit.com, £7.20 per month

Moonfruit is a polished, slick, web-design application, with nearly all the features you could need. It's well-designed and makes it easy to customise a template. All the key features are in place to create a modern-looking, full-featured site that's easy to edit.

Pros: Very well-designed; easy to select and customise a template; key features in place

Cons: Low storage allowance

1&1 MyWebsite Personal
Full review: tinyurl.com/ojxq2oy ★★★★☆

1and1.co.uk, £6 per month, £72 per year

1&1 MyWebsite Personal is a decent tool for putting together a standard website. There are a lot of predefined templates (300 to be precise), so finding something from which you can work is easy.

Pros: 300 templates; straightforward; automatic picture-size optimisation

Cons: Template categories are less than helpful

Intego Mac Internet Security X8

Full review: tinyurl.com/Lyfznco ★★★★★ **Macworld** EDITORS' CHOICE

intego.com; £40 per year

If you want software that consistently scores highly for spotting malware, Intego is for you. It's simple to install and set up, scored highly in our lab tests and has a minimal effect on Mac resources in normal use.

Pros: One of the most effective malware solutions for OS X; little resource hogging; easy to set up and use

Cons: Not as configurable as some

Eset Cyber Security

Full review: tinyurl.com/nsu3zqz ★★★★☆

eset.co.uk; £30 per year

Eset Cyber Security for Mac is a sophisticated security application with good malware detection. It's suited to anyone who likes to tweak and optimise, but is still simple enough to install and start comprehensive protection for any user.

Pros: Decent malware protection; sophisticated options available; fast on-demand scans

Cons: Can be complex to configure

Avira

Full review: tinyurl.com/mnpoory ★★★★☆

avira.com; Free

Avira's free offering for Mac users has good malware-spotting skills and a tidy user interface that doesn't detract from its duties. With a low impact on system performance, Avira shouldn't make its presence known when working behind the scenes.

Pros: Free; good malware detection; little system slowdown; better privacy policy

Cons: Heuristic scanning sometimes produces false positives

Parallels Desktop 9

Full review: tinyurl.com/qjepsw4 ★★★★☆

parallels.com/uk, £64

Parallels has added some useful new features to its Desktop 9 application, keeping it the highest-performance virtualisation package for OS X. It's support for OS X guests is embarrassingly poor, but Windows and Linux both work very well, and with terrific graphics that make these VMs feel like native installs in full-screen mode.

Pros: Fast and fluid for Windows and Linux VM guests; good integration for Windows 8 and 8.1; easier installation from disk images; better battery economy

Cons: Mac OS X as guest machine almost unusable

Cocktail 6.7

Full review: tinyurl.com/noq5co6 ★★★☆☆

maintain.se, £10

While most of Cocktail's features already exist on the Mac, being able to access them without using a number of system tools and Terminal make Cocktail a highly useful utility. The unregistered version of Cocktail allows for 10 launches before timing out – that should be sufficient for you to decide whether it is right for you.

Pros: Comprehensive set of repair and maintenance tools; additional Automator actions; automatic Pilot mode; software frequently updated

Cons: Some tools are complex to use

Freeway Pro 6

Full review: tinyurl.com/kx9toz4 ★★★★☆

softpress.com, £104

This design-led tool will let you publish content-rich websites in modern browsers, simply and at a very fair and reasonable price. It's not perfect: laying out elements could do with some automation, for example, and Freeway Pro apparently has only one level of undo.

Pros: Publish content-rich sites; fair price; HTML 5 support; 20 percent discount to education, charities and the elderly

Cons: Could do with more automation; one level of undo

Samepage.io

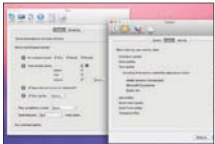Full review: tinyurl.com/Lxgbhjc ★★★★☆

kerio.co.uk, free

Kerio Samepage.io will appeal to small businesses and individuals who have used Workspace before, but it's far more accessible to newcomers, with its much reduced learning curve. It's free to try, too, so if you're managing team projects, take a look.

Pros: Cloud based; remotely hosted; build your own team collaboration or project space; 10GB storage in free version

Cons: Workspace users may be disappointed the software has been replaced by Samepage

CleanMyMac 2

Full review: tinyurl.com/qftexvd ★★★★☆

macpaw.com, £34

This seasoned utility can deal with almost every aspect of data cleaning. It's expensive when compared with single-function open-source apps, but its integrated approach is well worth the money. There's a good reason why CleanMyMac has built up an enviable reputation, and this version will only further enhance that.

Pros: Excellent user interface; comprehensive set of tools; clear explanations of scan results; highly configurable

Cons: A little expensive

PrivacyScan 1.2

Full review: tinyurl.com/qygtfer ★★★★☆

macscan.securemac.com, $14 (£9.70)

PrivacyScan is a worthwhile addition to your set of security tools. It's easy to use, handles most modern web browsers and also supports common Mac apps. As long as you remember to run it, you can rest assured that your privacy will remain protected.

Pros: Easy to use; can remove an array of privacy threats; supports most modern browsers and essential Mac apps; includes secure shredding as well as standard delete

Cons: No scheduling or automation features; no ability to preserve some data

Extensis Portfolio Server 11.0.1

Full review: tinyurl.com/o73r6tx ★★★★★ **Macworld** EDITORS' CHOICE

extensis.com, Studio £1,798, POA for Professional and Enterprise editions

Portfolio Server effortlessly handles media management, and support for more file types and client customisation is welcome. Flash is required for all Client and Server web browsers, so may restrict your Client base. The Studio version has a one catalogue/three-user restriction.

Pros: Rapid and effective cataloguing of growing range of assets; more user customisation; AutoSync folders; enhanced keywording and metadata features

Cons: Flash-based web clients restricts some use; Studio version is limited to one catalogue and three users

I'm bored of the Apple Watch

We've had to wait for so long for the Apple Watch to arrive that I'm bored of it already

Apple first unveiled the Apple Watch at a special event in September 2014, but it won't be available to buy until the spring of this year, according to CEO Tim Cook, and that might not even be in the UK. So that's a wait of at least eight months, which to me seems like far, far too long. The Apple Watch is old news already, and I haven't even tried it yet.

I completely understand why Apple wanted to unveil the Apple Watch last year, even though it wasn't ready to go on sale yet. Wearables were all-the-rage already and Apple wasn't seen to be in the market, so the company wanted to make sure everyone knew that it was working on something amazing that has the potential to shake things up a bit, even if that wouldn't be until mid-2015.

But even then I felt like Apple was a bit late to the game, and who's to say that the Apple Watch is going to do what the iPod did to MP3 players and the iPad did to tablets? For one, rivals including Samsung, LG, Google, HTC, Sony and Motorola have launched very successful smartphones in the past year, boosting Android's smartphone market share to more than 80 percent (iOS is less than 12 percent). And, of course, the Apple Watch won't work with Android.

Apple's rivals have made big efforts with their many different smartwatches and yet none of those have taken off in the way I expect they'd hoped. I don't know anyone with a smartwatch aside from some tech journalists in the office (they don't count – they're paid to wear them), and I've seen only one out in the wild in the past two years.

Apple must be confident that its watch is going to change things, and make us all want to be seen wearing a wrist-mounted computer, but right now I'm struggling to share that confidence myself.

Even Apple founder Steve Wozniak lacks enthusiasm for the Apple Watch. Woz himself has owned several smartwatches already, but he's already got rid of them, because he found himself going back to his phone regularly for the larger display. According to Woz, the Apple Watch is just a "luxury fitness band", and with a price tag that starts at £300 and could reach all the way up to £3,000, luxury is certainly accurate.

Rivals from the likes of Motorola, LG, Sony and Samsung are generally under £300, and some are under £200, including the brilliant LG G Watch R.

So it's going to be expensive, potentially not as useful as everyone might hope, and it's only going to work with 12 percent of the smartphone market. Plus, as it was unveiled so long ago, we've had plenty of time to think long and hard about whether or not we should buy an Apple Watch.

We now know that we'll have to charge it every single day, we've had more time to realise that smartwatches are not as awesome as we'd imagined, and we've had plenty of time to take a look at the Apple Watch's rivals and pick them apart to see how they compare.

If we'd been kept in the dark about the Apple Watch, we could have continued to enjoy speculating over how amazing it would be. It might have prevented those who really do want a smartwatch from buying one from the competition just in case the Apple Watch blew them all out of the water. And we wouldn't have examined every detail of the Apple Watch and discovered its downfalls long before we've even got it in our hands.

What's more, we've stopped talking about it. When the Apple Watch was unveiled, everyone was nattering and the buzz surrounding it was perfect for an imminent launch. Now, that buzz has died down to nearly nothing.

I hope I'm wrong, and that I get excited about the Apple Watch again when it arrives, but right now, I'm bored of waiting.

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